

SECTION1 SUMMARY

KEY TO ABBREVIATIONS

A	AC	:Alternating Current
	ACC	:Automatic Color Control
	ACSS	:Automatic Channel Setting System
	ADJ	:Adjust
	A/E	:Audio Erase
	AFC	:Automatic Frequency Control
	AFT	:Automatic Fine Tuning
	AGC	:Automatic Gain Control
	A.H.SW	:Audio Head Switch
	ALC	:Automatic Level Control
	AM	:Amplitude Modulation
	AMP	:Amplifier
	ANT	:Antenna
	APC	:Automatic Phase Control
B	ASS'Y	:Assembly
	AUX	:Auxiliary
	B	:Base
	BGP	:Burst Gate Pulse
	BPF	:Bandpass Filter
C	BS	:Broadcasting Satellite
	BW or B/W	:Black and White
C	C	:Capacitor, Chroma, Collector
	CAN	:Cancel
	CAP	:Capstan
	CAP.BRK	:Capstan Brake
	CAP.RVS	:Capstan Reverse
	CATV	:Cable Television
	CBA	:Circuit Board Assembly
	CCD	:Charge Coupled Device
	C.CTL	:Chro Control, Capstan Control
	CFG	:Capstan Frequency Generator
	CHROMA	:Chrominance
	CNR	:Chroma Noise Reduction
	COMB	:Combination
		Comb Filter
	COMP	:Comparator
		Composite
		Compensation
	CONV	:Converter
	C.ROT SW	:Color Rotary Switch
	CS	:Chip Selcet
D	C.SYNC	:Composite Synchronization
	CTL DIV	:Control Divide
	CUR	:Current
	CYL	:Cylinder
	D	:Drum, Digital, Diode, Drain
D	D.ADJ	:Drum Adjust
	DC	:Direct Current
	D.CTL	:Drum Control
	DEMODO	:Demodulator
	DET	:Detector
	DEV	:Deviation
	DHP	:Double High Pass
	DIGITRON	:Digital Display Tube
	DL	:Delay line
	DOC	:Drop Out Compensator
	DUB	:Dubbing
	D.V SYNC	:Dummy Vertical Synchronization
E	E	:Emitter
	EE	:Electric to Eletric
	EMPH	:Emphasis
	ENA	:Enable
	ENV	:Envelope
	EP	:Extended Play
	EQ	:Equalizer
	EXP	:Expander
F	F	:Fuse
	FB	:Feed Back
	FBC	:Feed Back Clamp
	FE	:Full Erase
	FG	:Frequency Generator
	FL	:Filter
	FM	:Frequency Modulation
	F/R	:Front/Rear
	FS	:Frequency Synthesizer
	FSC	:Subcarrier Frequency
G	F/V	:Frequency Voltage
	GEN	:Generator
H	H	:High, Horizontal
I	IC	:Integrated Circuit
	IF	:Intermediate Frequency
	INS	:Insert
L	L	:Low, Left, Coil
	LD	:LED
	LD VTG CTL	:Loading Voltage Control
	LECHA	:Letter Character
	L.M	:Level Meter
	LP	:Long Play

M	LPF	:Low Pass Filter
	MAX	:Maximum
	MD	:Modulator
	MECHA.CTL	:Mechanism Control
	MIC	:Microphone
	MIN	:Minimum
	MIX	:Mixer, Mixing
	M.M.	:Monostable, Multivibrator
	MMV	:Mono Multi Vibrator
	MOD	:Modulation, Modulator
	MODEM	:Modulator-Demodulator
	MPX	:Multiplex
	NR	:Noise Reduction
N	OSC	:Oscillator
	OSD	:On Screen Display
P	PB	:Playback
	PCB	:Printed Circuit Board
	P.CTL	:Power Control
	PRE-AMP	:Preamplifier
	P.F	:Power Failure
	PG	:Pulse Generator
	PLL	:Phase Locked Loop
	PREM.DET	:Premire Detect
	P.P	:Peak-to-Peak
	PS	:Phase Shift
	PWM	:Pulse Width Modulation
	PWR CTL	:Power Control
Q	Q	:Transistor
	QH	:Quasi Horizontal
	QSR	:Quick Setting Record
	QTR	:Quick Timer Record
	QV	:Quasi Vertical
R	R	:Resistor, Right
	RE(or RC)	:Remocon, Receiver
	REC	:Recording
	REC S 'H'	:Record Start 'High'
	REF	:Reference
	REG	:Regulated, Regulator
	REMOCON	:Remote Control(unit)
	RF	:Radio Frequency
	R/P	:Record/Playback
	RTC	:Reel Time Counter
S	S	:Serial
	S.ACCEL	:Slow Accel
	SAOP	:Second Audio Program
	SC	:Scart, Simulcast
	S.DET	:Secam Detect
	SH	:Shift
	SHARP	:Sharpness
	SIF	:Sound Intermediate Frequency
	SLD	:Side Locking
	S/N	:Signal to Noise Ratio
	SP	:Standard Play
	ST	:Stereo
	SUB	:Subtract, Subcarrier
	SW or S/W	:Switch
T	SYNC	:Synchronization
	SYSCON	:System Control
	T	:Coil
	TP	:Test Point
	TR	:Transistor
U	TRK	:Tracking
	TRANS	:Transformer
	TU	:Tuner, Take-up
	UHF	:Ultra High Frequency
V	UNREG	:Unregulated
	V	:Volt, Vertical
	VA	:Always Voltage
	VCO	:Voltage Controlled Oscillator
	VGC	:Voltage Gain Control
	VHF	:Very High Frequency
	V.H.SW	:Video Head Switch
	VISS	:VHS Index Search
	VPS	:Video Program System
	VR	:Variable Resistor or Volume
	V-SYNC	:Vertical Synchronization
	VTG	:Voltage
	VV	:Voltage to Voltage
	VXO	:Voltage X-tal Oscillator
W	W	:Watt
	WHT	:White
	W/O	:With out
X	X-TAL	:Crystal
	Y/C	:Luminance/Chrominance
Y	YNR	:Luminance Noise Reduction
	ZD	:Zener Diode

IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, the products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

• Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.
2. Parts identified by the $\triangle$ symbol and shaded (∇) parts are critical for safety.
Replace only with specified part numbers.
Note : Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.
3. Use Specified internal wiring. Note especially:
 - 1) Double insulated wires
 - 2) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
 - 1) Insulation Tape
 - 2) PVC tubing
 - 3) Spacers
 - 4) Insulation sheets for transistor
5. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)
6. Check that replaced wires do not contact sharp edged or pointed parts.
7.
 - 1) When a power cord has been replaced, check that A mark is made on the cord, under strain, near the aperture, and the flexible cord is subjected 100 times to a pull of 40N for a duration of 1 second each.
 - 2) During the test, the cord shall not be displaced by more than 2mm
8. Also check areas surrounding repaired locations.

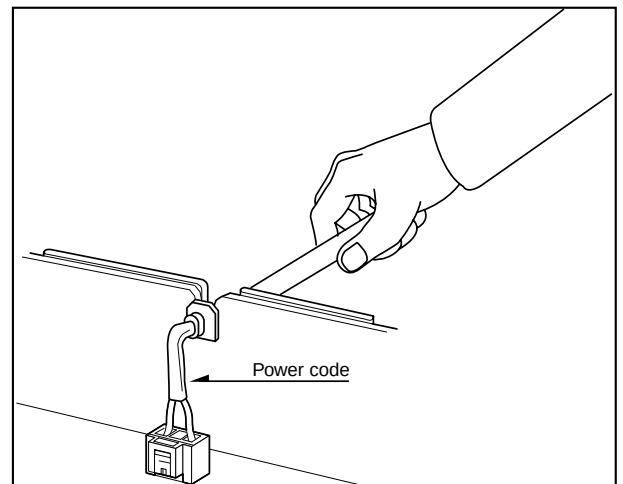


Fig. 1

SAFETY CHECK AFTER SERVICING

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

• Insulation resistance test

confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, incrophone jacks, earphone jacks, etc.) See table below.

• Dielectric strength test

Confirm specified dielectric strength or greater between power cord prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, incrophone jacks, earphone jacks, etc.) See table below.

• Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table below.

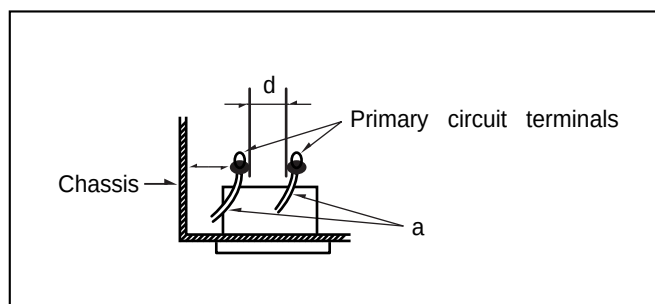


Fig. 2

Table 1 : Ratings for selected areas

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance(d),(d')
*100 to 130 V 200 to 240 V	Europe Australia	F 10 MΩ/500 V DC	4kV 1 minute	F 6mm(d) F 8mm(d) (a Power cord)

* Class II model only.

Note. This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

• Leakage Current test

Confirm specified or lower leakage current between B(earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.)

Measuring Method: (Power ON)

Insert load Z between B(earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure and following table.

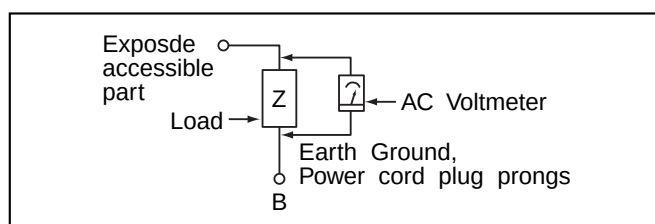


Fig. 3

Table 2:Leakage current ratings for selected areas.

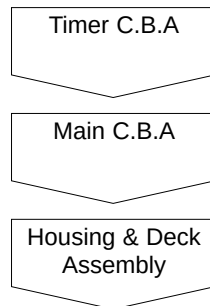
AC Line Voltage	Region	Load Z	Leakage Current(i)	Earth Ground (B) to :
100 to 130 V	Europe	2kΩ	i E 0.7m A peak i E 2m A DC	Antenna earth terminals
200 to 240 V	Australia	50kΩ	i E 0.7m A peak i E 2m A DC	Other terminals

Note. This table is for IEC member only. Be sure to confirm the precise values for your particular country and locality.

SECTION 2 CABINET & MAIN CHASSIS SERVICE METHOD

Electrical Part

(1) Re-assembly Flow for service like Fig. 2-1



(2) To check and replace Electrical parts

- ① Re-assemble the unit according to No.1) Re-assembly Flow.
- ② Place the unit like Fig. 2-1
- ③ Check and replace Electrical parts.

NOTE :

- ① Insert Video Cassette Tape inversely like Fig. 2-1 to check and replace defective parts.
- ② In disassembling and reassembling, be careful not to damaged CST switch.

(Positioned Upside Down)

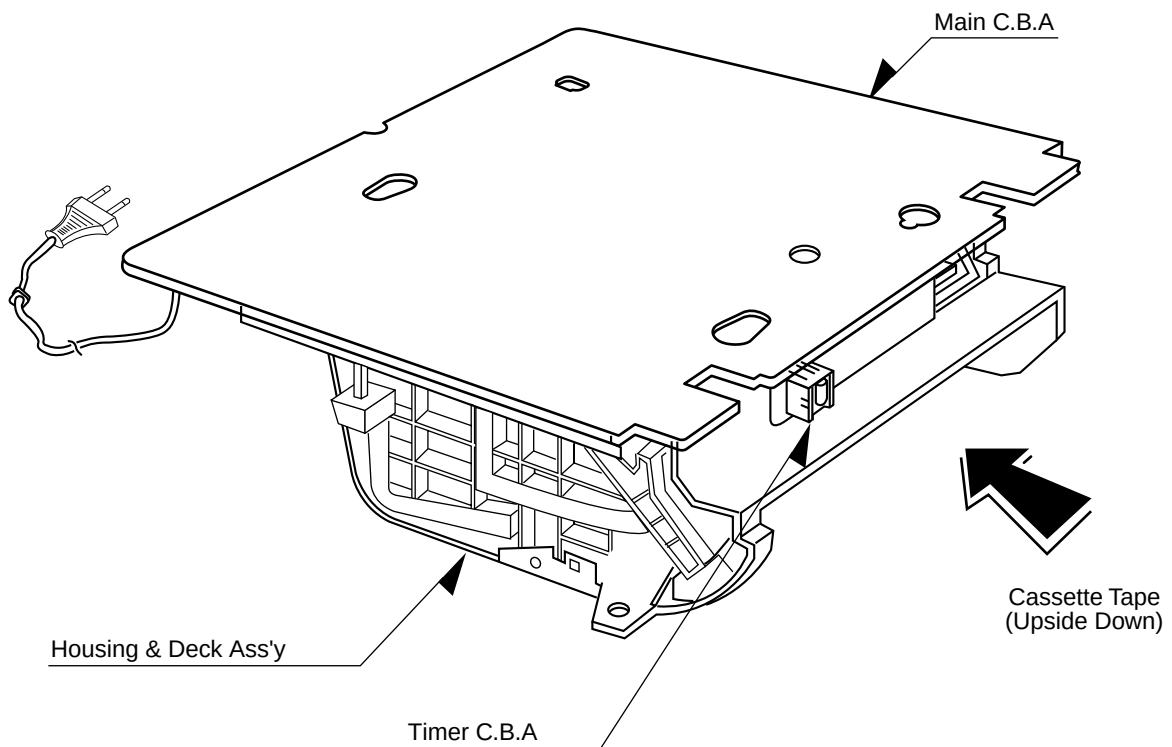
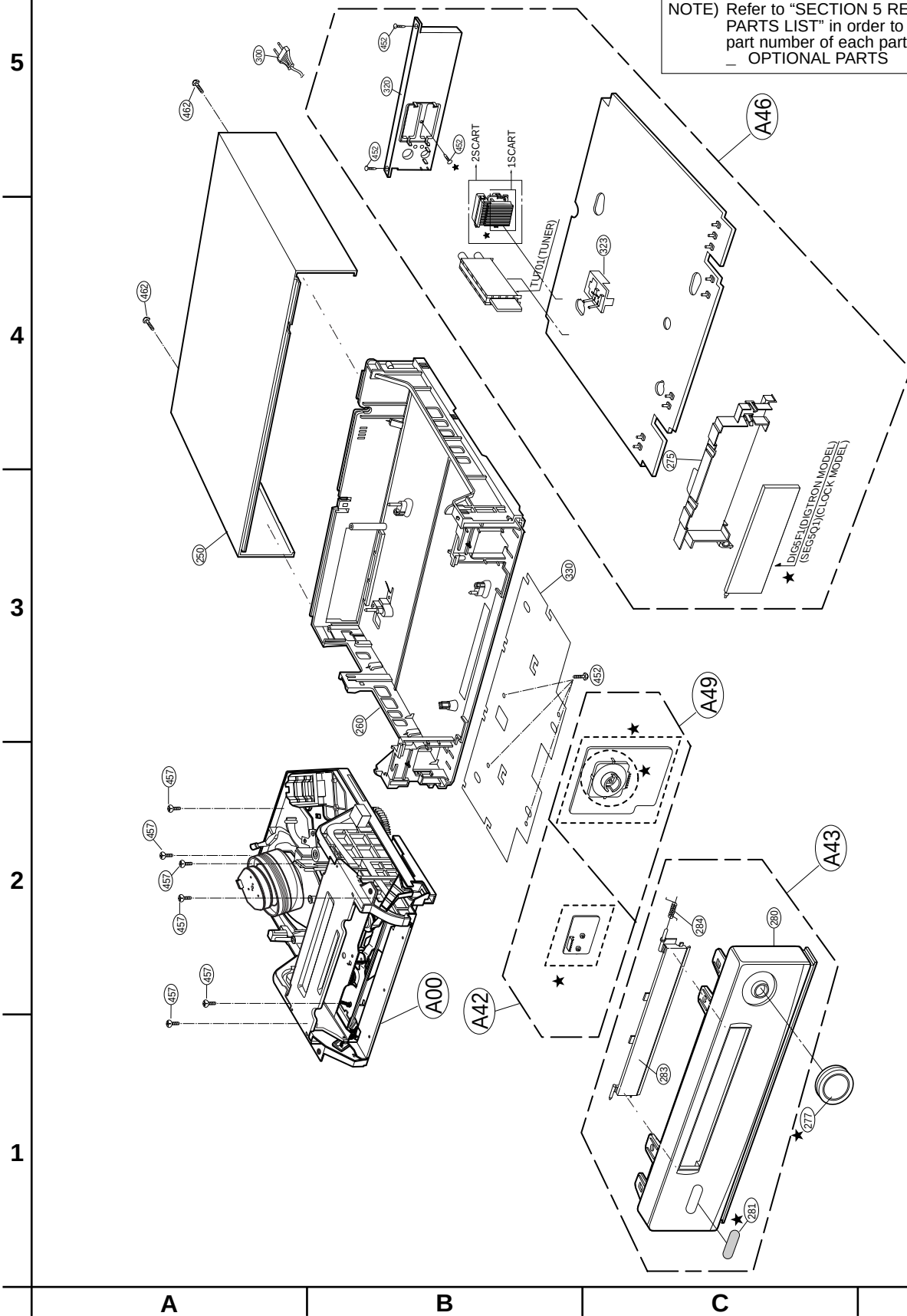


Fig.2-1

EXPLODED VIEWS

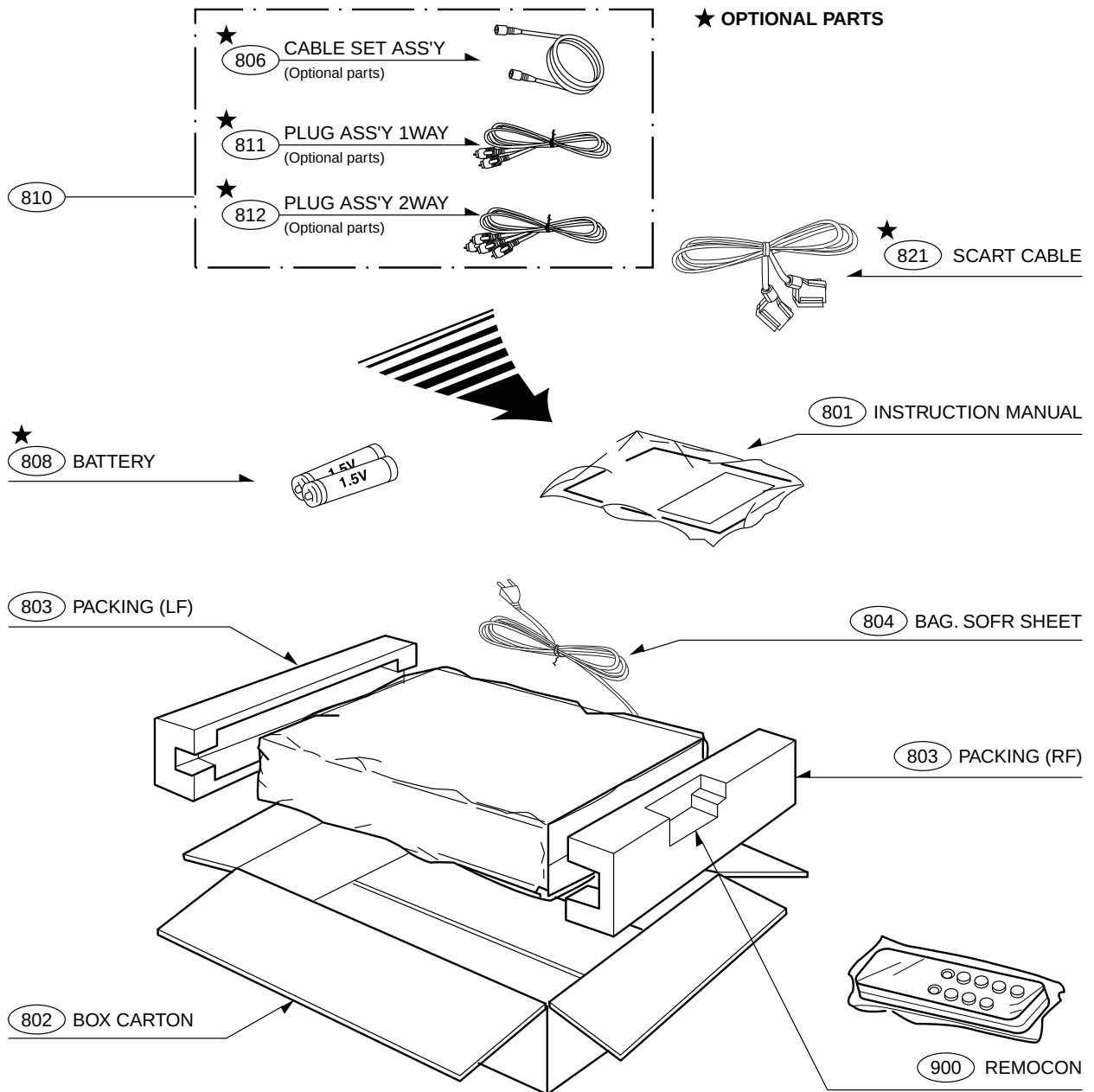
1. Cabinet and Main Frame Section

NOTE) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.
— OPTIONAL PARTS



2.Packing Accessory Section

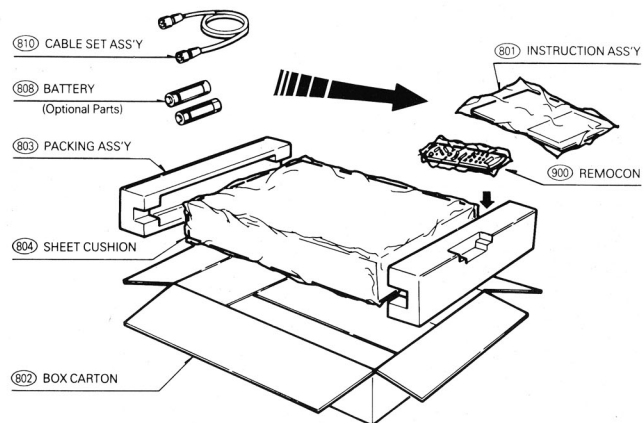
NOTE) Refer to "SECTION REPLACEMENT PARTS LIST" in order to look for the part number of each part.



EXPLODED VIEWS

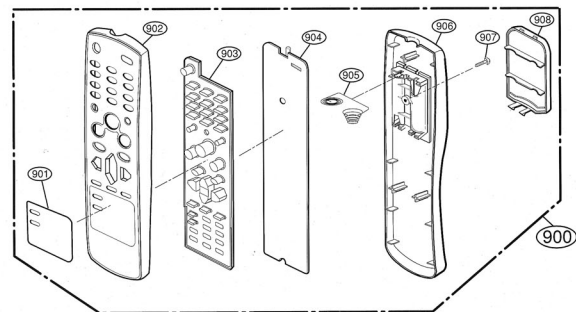
2. Packing & Accessory Section

NOTE) Refer to "SECTION 5 REPLACEMENT PARTS LIST" in order to look for the part number of each part.



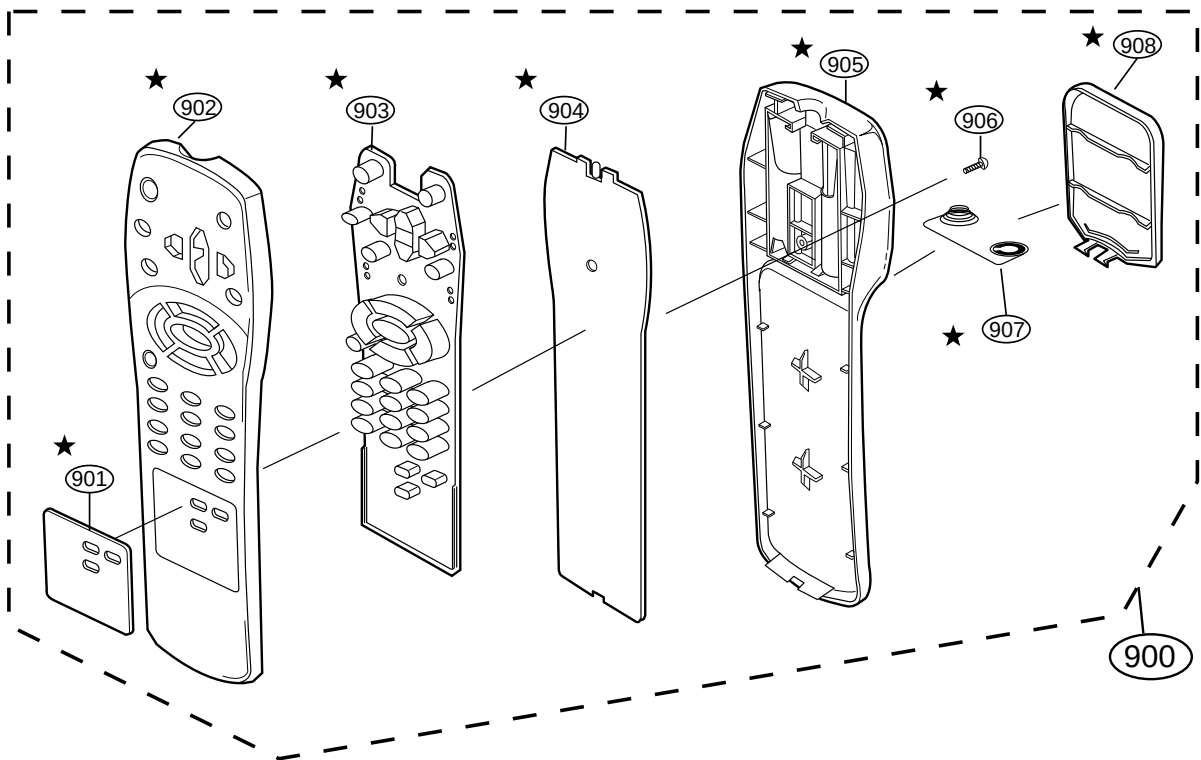
EXPLODED VIEWS

3. Remote Control Section



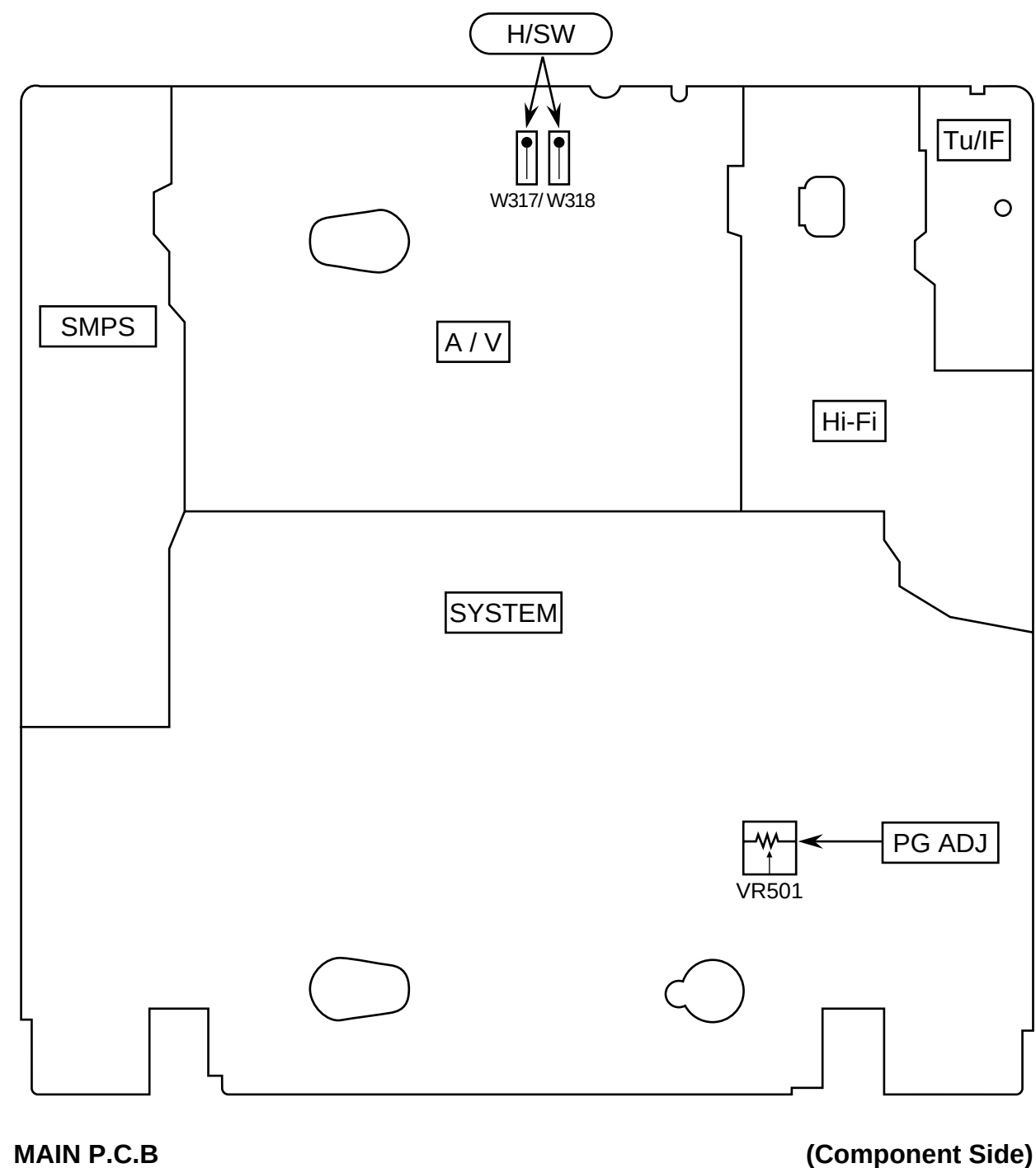
3.Remote Control Section

★ OPTIONAL PARTS



SECTION 3 ELECTRICAL ELECTRICAL ADJUSTMENT POINTS ARRANGEMENT

 : Measurement point
 : Adjustment point



ELECTRICAL ADJUSTMENT PROCEDURES

1. Servo Adjustment

- 1) PG Adjustment
 - Test Equipment

- a) OSCILLOSCOPE
- b) PAL TEST TAPE (VHS SP)

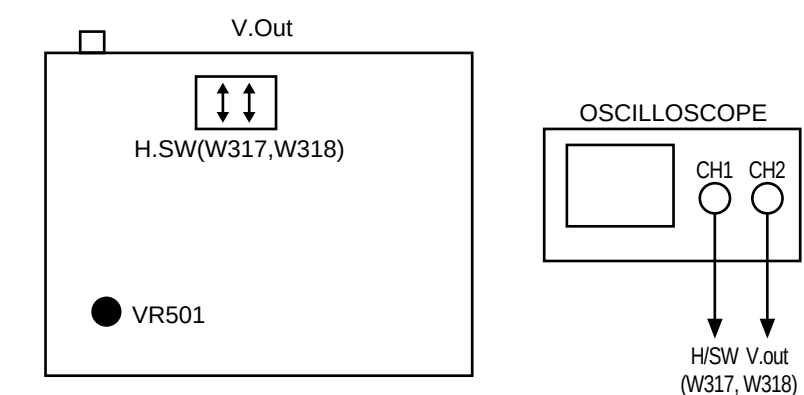
- Adjustment And Specification

MODE	MEASUREMENT POINT	ADJUSTMENT POINT	SPECIFICATION
PLAY	V.Out H/SW(W317, W318)	VR501	6.5 ! 0.5H

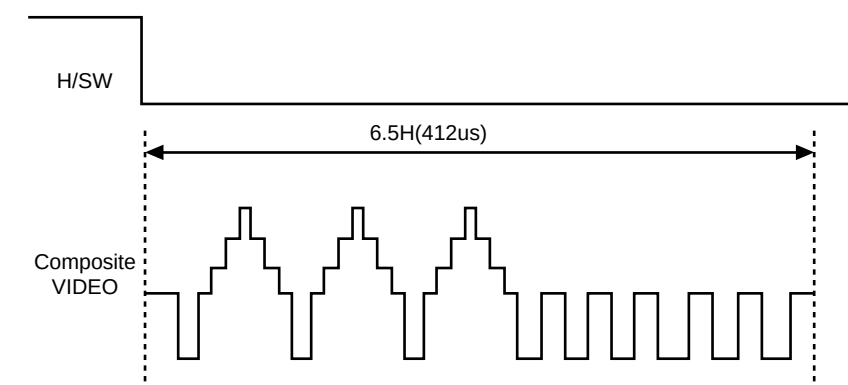
• Adjustment Procedure

- a) Insert the PAL SP Test Tape and play.
Note - Adjust the distance of X, pressing the Tracking(+) or Tracking(-) when the "ATR" is blink after the PAL SP Test Tape is inserted.
- b) Connect the CH1 of the oscilloscope to the H/SW(W317, 318) and CH2 to the Video Out for the VCR.
- c) Trigger the mixed Video Signal of CH2 to the CH1 H.SW(W317, W318), and then check the distance (time difference), which is from the selected A(B) Head point of the H.SW(W317, W318) signal to the starting point of the vertical synchronized signal, to 6.5H ! 0.5H (412µs, 1H=63.5µs).

• CONNECTION

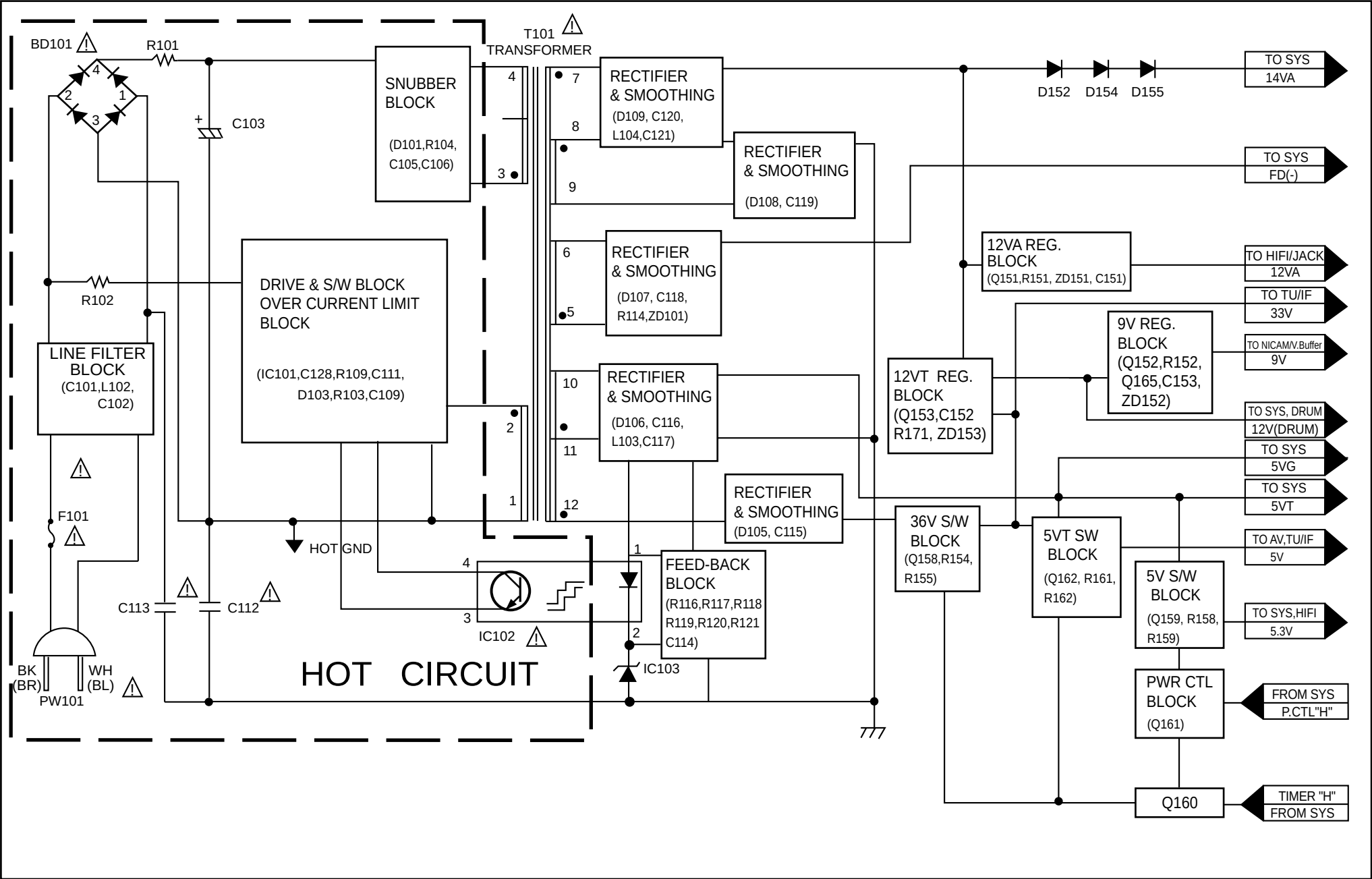


• WAVEFORM



BLOCK & CIRCUIT DIAGRAMS

1. Power Block Diagram



NOTES :  Symbol denotes AC ground.
 Symbol denotes DC chassis ground.

* IC101 Voltage Sheet

	PB		REC	
	PB	REC	PB	REC
1	16.1	4.0	16.3	4.6
5				
IC101				
1	309	0.0	0.0	
REC	309	0.0	0.0	

* IC102 Voltage Sheet

	PB		REC	
	PB	REC	PB	REC
1	4.0	0.0	4.0	0.0
4				
IC102				
1	4.9	3.9		
REC	4.9	4.0		

* IC103 Voltage Sheet

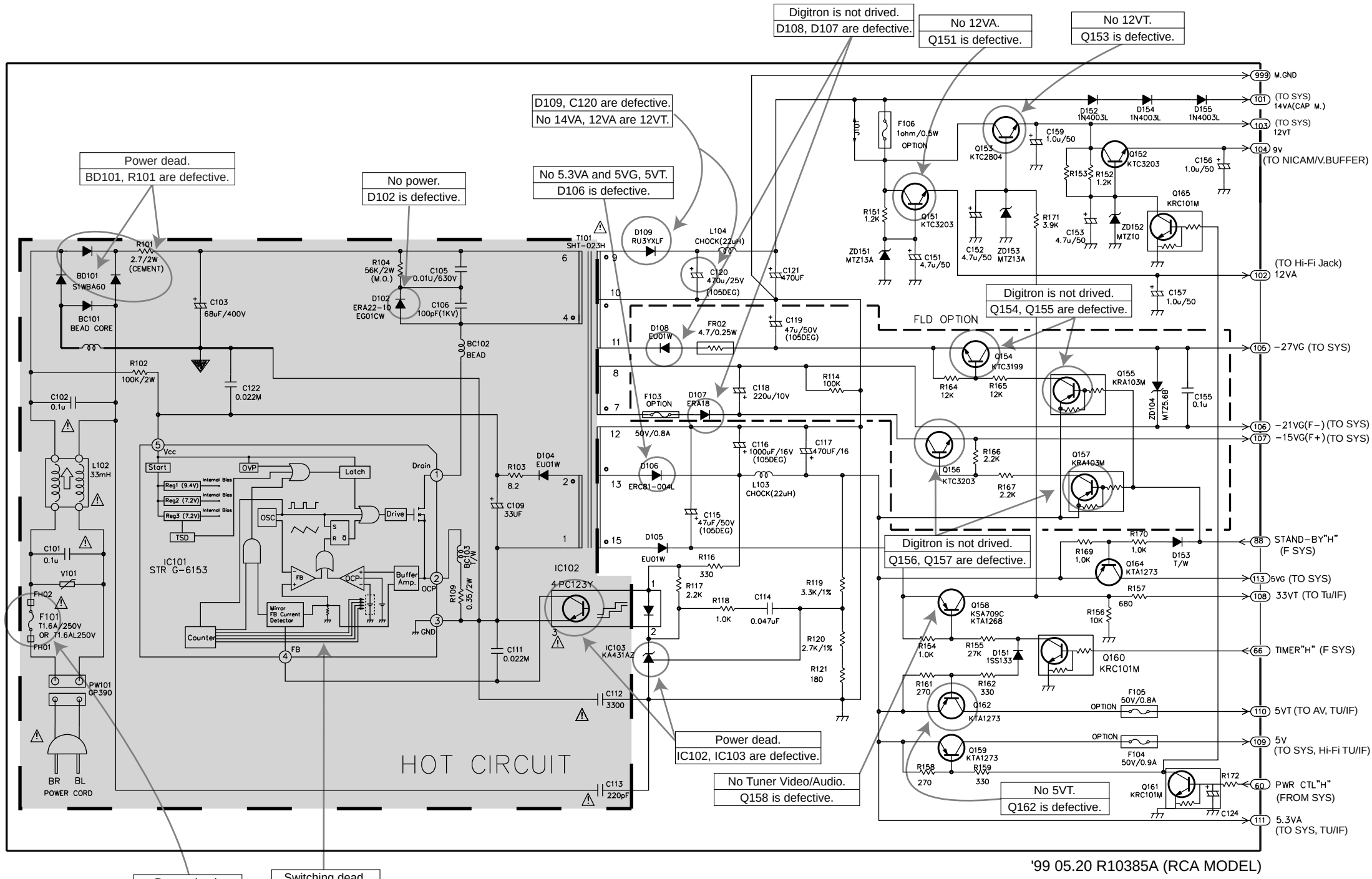
	Emitter		Collector		Base	
	PB	REC	PB	REC	PB	REC
IC103	2.5	2.5	0.0	0.0	3.9	3.9

_ TR Voltage Sheet

	Emitter		Collector		Base	
	PB	REC	PB	REC	PB	REC
Q151	11.9	11.8	14.8	15.0	12.5	12.4
Q152	9.4	9.3	11.8	11.6	10.0	9.9
Q153	11.8	11.7	14.8	15.0	12.4	12.3
Q154	-27.3	-27.9	-27.3	-27.8	-26.6	-27.0
Q155	5.3	5.3	5.2	5.3	0.0	0.0
Q156	-16.1	-16.5	-16.0	-16.4	-15.4	-15.7
Q157	5.3	5.3	5.2	5.2	0.0	0.0
Q158	35.6	36.0	35.3	35.7	35.0	35.4
Q159	5.3	5.3	5.2	5.2	4.5	4.5
Q160	0.0	0.0	0.0	0.0	5.0	5.0
Q161	0.0	0.0	0.1	0.0	5.0	5.0
Q162	5.3	5.3	5.2	5.2	4.5	4.5
Q164	5.3	5.3	5.3	5.3	4.6	4.6
Q165	0.0	0.0	10.0	10.0	0.0	0.0

1. Power Circuit Diagram

9
8
7
6
5
4
3
2
1



LOCATION GUIDE

BC101	B6	Q160	J3
BC102	E6	Q161	J2
BC103	E4	Q162	I3
BD101	B6	Q164	J4
C101	A4	Q165	K7
C102	A5	R101	B7
C103	C6	R102	B6
C105	E6	R103	E5
C106	E6	R104	D6
C109	E4	R109	E4
C111	E3	R114	H5
C112	F3	R116	G4
C113	F2	R117	G4
C114	G4	R118	G4
C115	G4	R119	H4
C116	G5	R120	H3
C117	H5	R121	H3
C118	G5	R151	H7
C119	H6	R152	J7
C120	G6	R153	J7
C121	H6	R154	I3
C122	C5	R155	I3
C151	I6	R156	J4
C152	I7	R157	J4
C153	J7	R158	I2
C155	K5	R159	I2
C156	K7	R161	I3
C157	K6	R162	I3
C159	J8	R164	I5
D102	D6	R165	I5
D104	E5	R166	I5
D105	F4	R167	I5
D106	F5	R169	J4
D107	G5	R170	J4
D108	F6	R171	J7
D109	F7	T101	F7
D151	I3	V101	B4
D152	J8	ZD104	K5
D153	K4	ZD151	H7
D154	J8	ZD152	J7
D155	K8	ZD153	I7
F103	F5		
F104	J2		
F105	J3		
F106	H8		
FH01	A3		
FH02	A4		
FR02	G6		
IC101	B4		
IC102	F4		
IC103	F3		
J101	H8		
L102	B5		
L103	G5		
L104	G7		
PW101	B3		
Q151	I7		
Q152	J7		
Q153	I7		
Q154	I6		
Q155	J6		
Q156	I5		
Q157	J5		
Q158	I4		
Q159	I2		

NOTES) ⚡ Symbol denotes AC ground.
⏏ Symbol denotes DC chassis ground.

NOTE) ⚠ Warning
Parts that are shaded are critical
With respect to risk of fire or
electrical shock.

NOTE :
1. Shaded (■) parts are critical for safety. Replace only
with specified part number.
2. Voltages are DC-measured with a digital voltmeter
during TUNER mode.

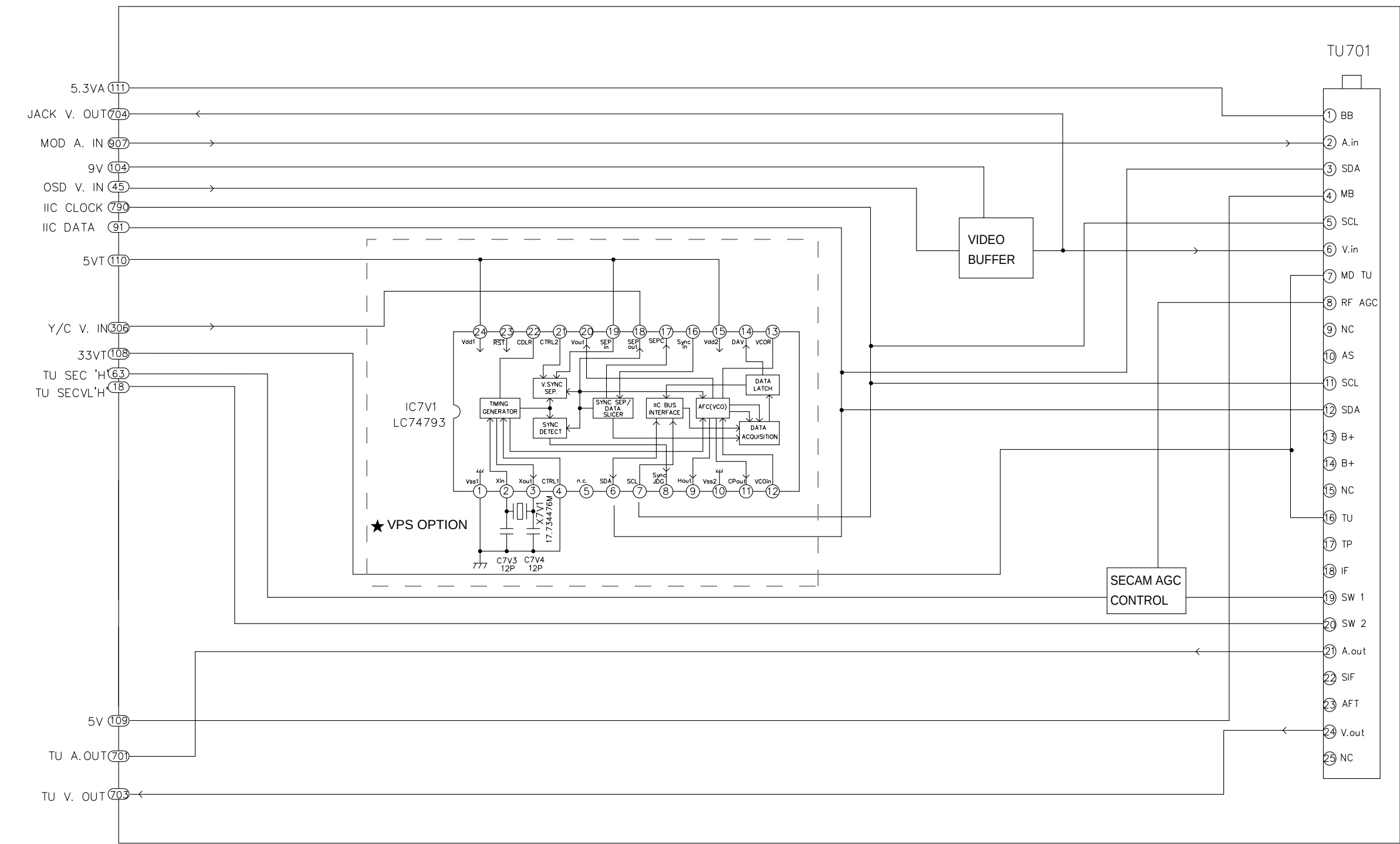
* OPTION TABLE

NO.	I / F	OTHERS
FR02	ORF0471Q619	0
F103	ICP-N10	0
F104	ICP-N20	X
F105	ICP-N20	X
F106	ORF0101A619	X

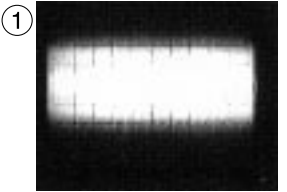
'99 05.20 R10385A (RCA MODEL)

A B C D E F G H I J K L M N

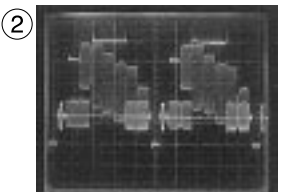
2. Tu/IF Block Diagram



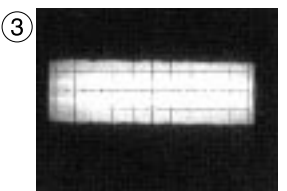
* TU/IF Oscilloscope Waveform



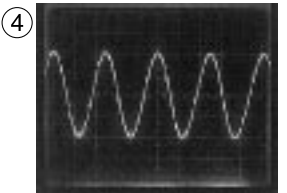
TU701 18 Pin (IF Signal)



TU701 24 Pin (Video Signal)



TU701 22 Pin & IC751 47 Pin (SIF Signal)



TU701 21 Pin (Audio signal)

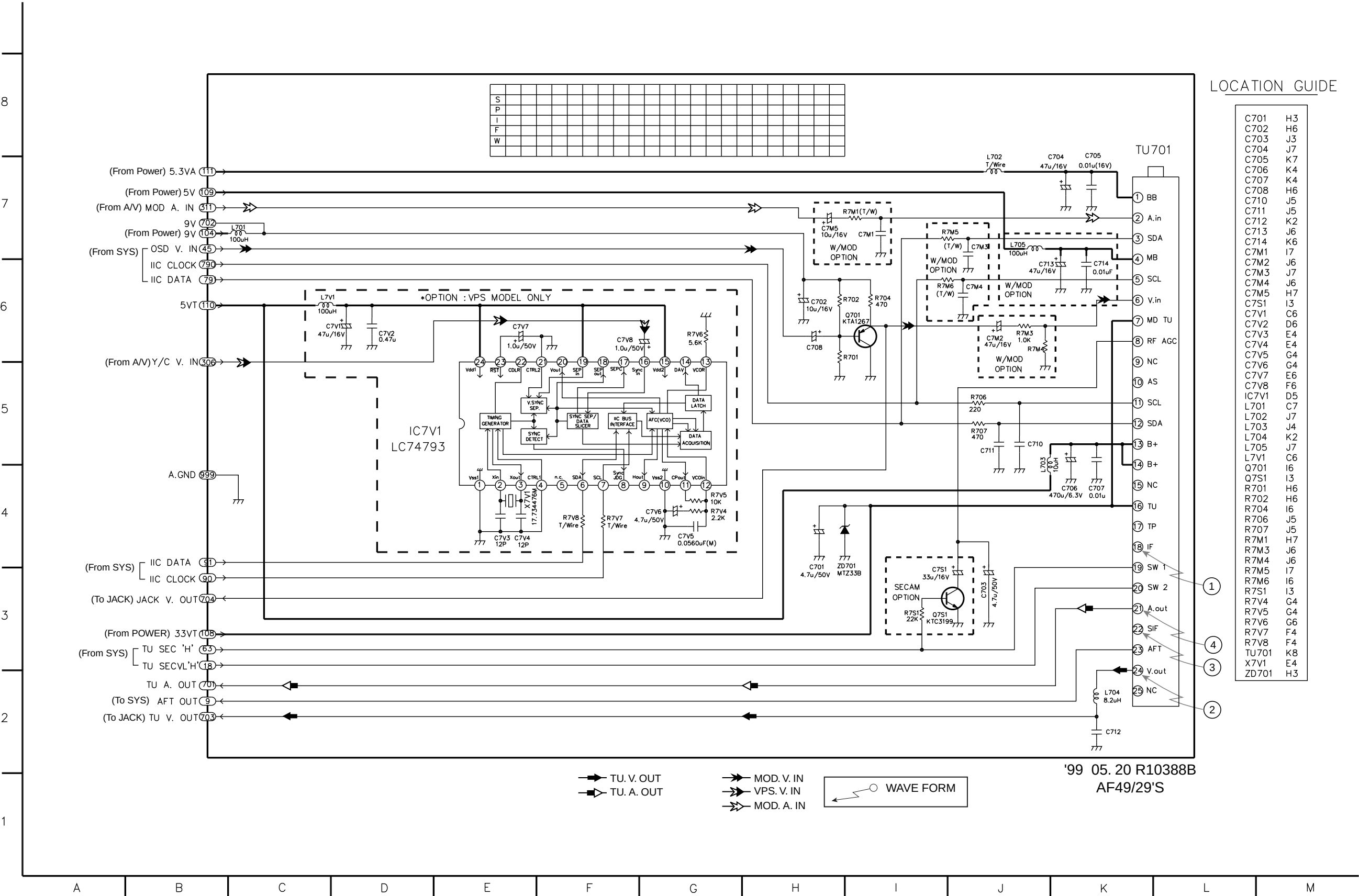
* TU701 Voltage Sheet

1	BB	5.25	13	B+	4.985
2	A.iN	0.002	14	B+	4.985
3	SEA	5.1	15	NC	0
4	MB	5.19	16	TU	32.29
5	SCL	5.2	17	TP	0
6	V.iN	0	18	IF	0
7	MD TU	32.27	19	SW1	5.0541
8	KF AGC	2.55	20	SW2	0
9	NC	0	21	A.OUT	2.38
10	AS	0.048	22	SIF	0
11	SCL	5.1	23	AFT	2.463
12	SEA	5.2	24	V.OUT	1.337
			25	NC	0

* IC7V1 Voltage Sheet

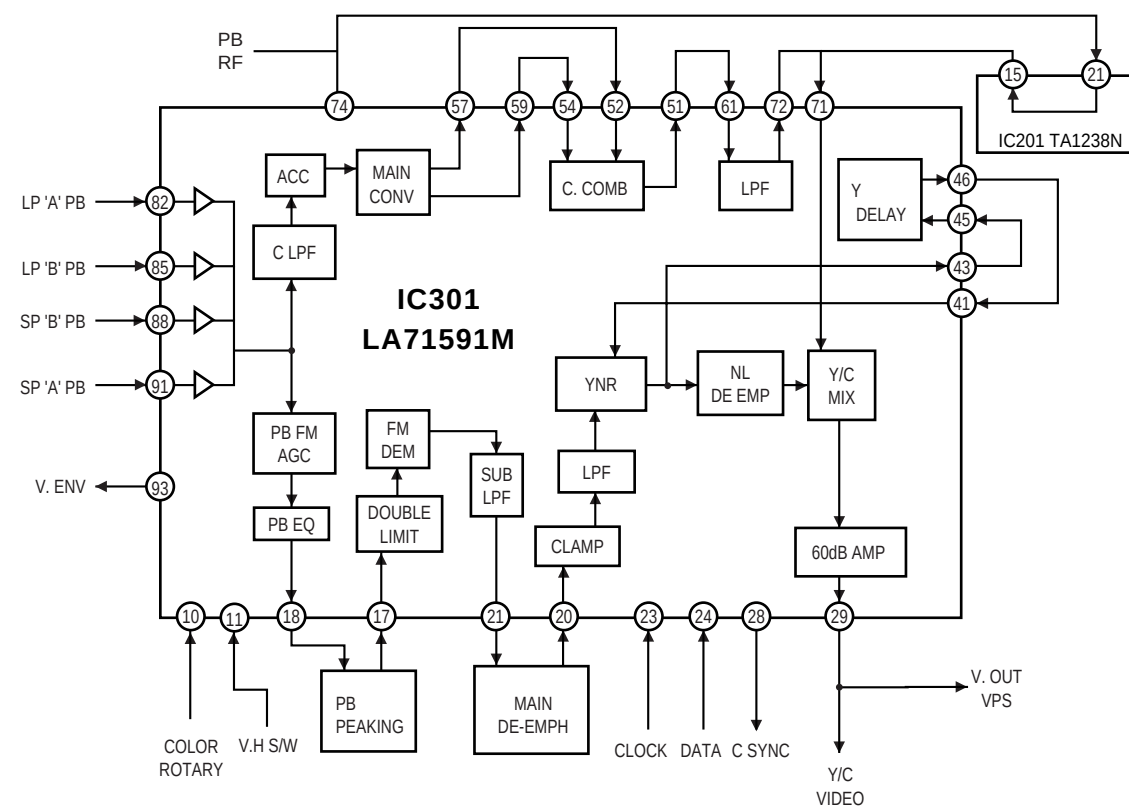
5.022	4.997	4.497	0.002	4.969	5.032	4.602	2.532	2.933	5.032	0.159	1.276
20											
15											
5											
10											
0.0032	5.532	6.27	0.002	0.001	5.2	5.2	5.012	4.645	0.0032	9.932	9.992
IC7V1(LC74793)											

2. Tu/IF Circuit Diagram

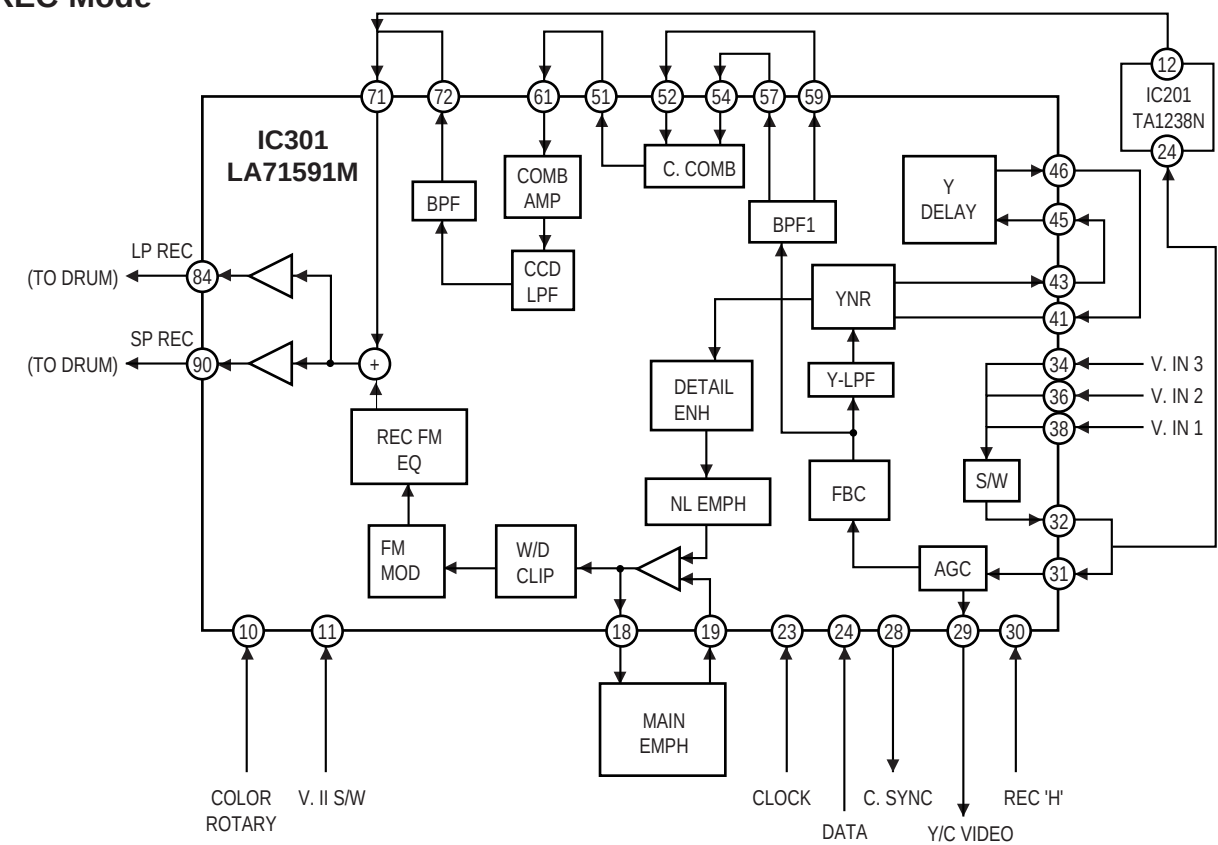


3. Y/C Block Diagram

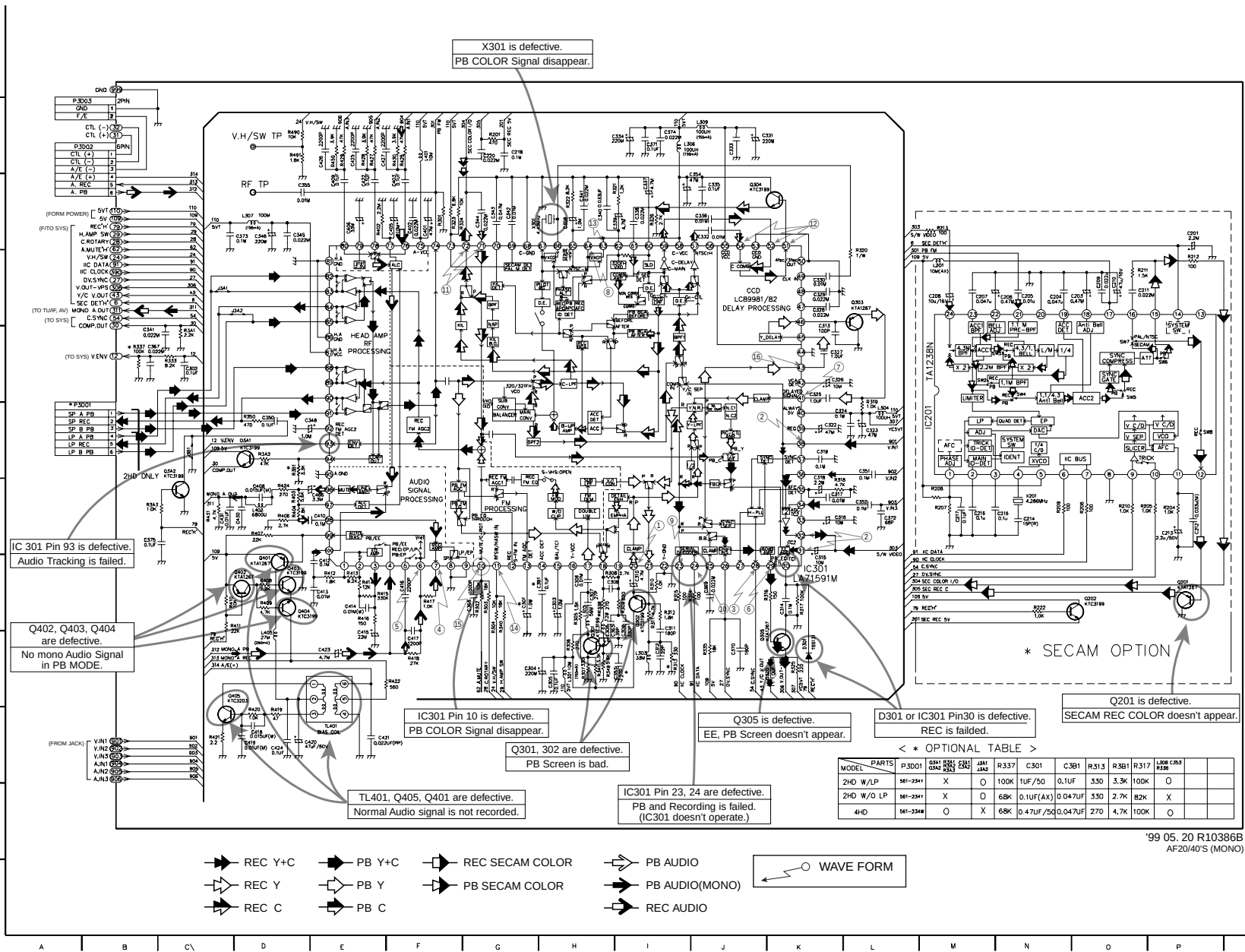
1) PB Mode



2) REC Mode



3. A/V Circuit Diagram



LOCATION GUIDE

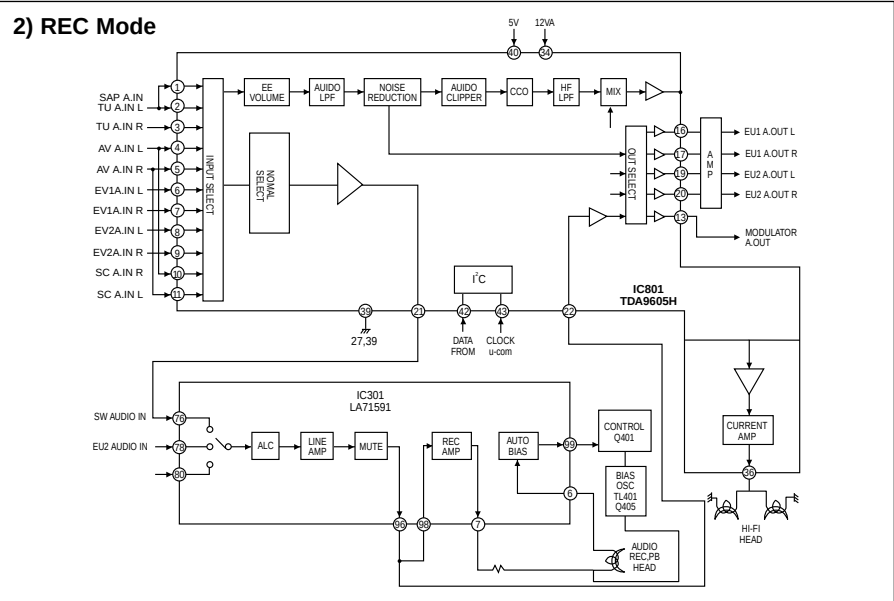
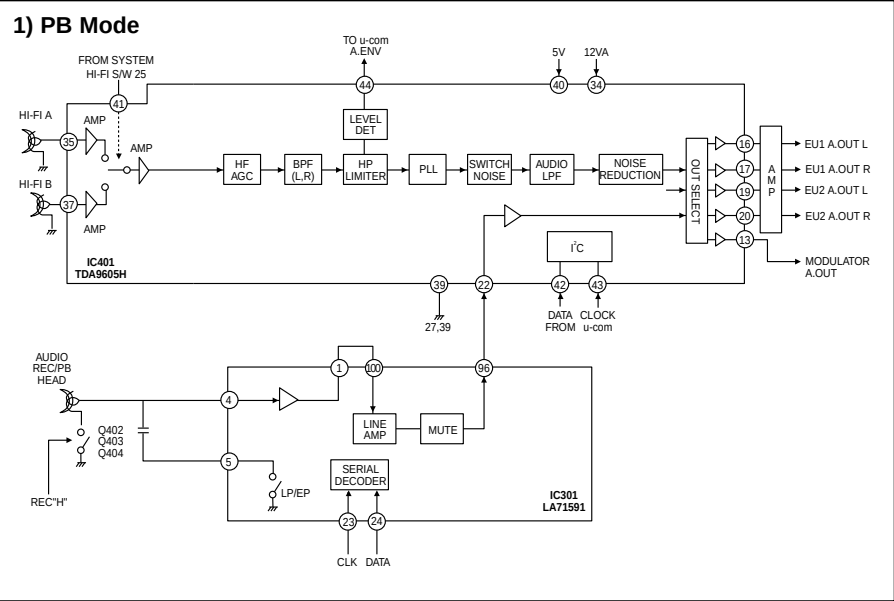
C201	P10	C372	L6	R212	P9
C203	09	C373	D10	R213	M10
C204	N9	C374	I11	R222	N5
C205	N9	C375	B8	R301	F10
C206	N9	C3A1	B8	R302	G5
C207	M9	C3B1	H5	R303	G5
C208	M9	C401	F10	R304	G4
C209	09	C402	F10	R305	H5
C210	09	C403	F10	R306	H4
C211	09	C405	F10	R307	H4
C212	P6	C406	F10	R308	H5
C213	P6	C408	D6	R309	I5
C214	N6	C409	E10	R310	I5
C215	N6	C410	E6	R311	I5
C216	M6	C412	E5	R312	I5
C217	M6	C413	E5	R313	I4
C218	C11	C414	E5	R314	J5
C220	G11	C415	E4	R315	I5
C301	05	C416	F5	R316	K5
C302	C8	C417	F4	R317	K5
C303	H5	C418	D3	R318	K6
C304	G4	C419	D3	R319	L7
C305	H4	C420	D3	R320	L9
C306	H5	C421	E3	R321	I10
C307	H5	C422	E10	R322	H10
C308	H5	C423	E4	R323	F10
C309	I4	C424	D3	R324	G10
C310	I5	C425	E11	R325	K4
C311	I5	C426	E11	R326	I10
C312	I4	C427	E11	R327	C8
C313	K8	C430	D6	R328	J4
C314	K5	C431	C6	R329	B8
C315	K5	C446	E6	R330	H5
C316	K6	D301	K4	R340	G4
C317	K6	IC201	H7	R341	H4
C318	K6	IC301	K5	R349	H4
C319	K7	J3A1	C9	R350	D7
C320	K4	J3A2	C9	R3A1	C9
C322	K7	J3B1	C7	R3A2	D7
C323	L7	L201	H9	R3A3	B6
C324	K7	L301	H4	R3B1	D7
C325	K8	L302	H5	R402	E10
C326	K8	L303	I4	R403	D6
C327	K8	L304	L7	R404	D6
C328	K9	L306	I11	R406	D6
C329	K9	L307	D10	R407	D6
C330	K9	L308	H4	R408	D9
C331	J11	L309	J11	R409	D9
C332	J10	L401	F11	R410	C5
C333	J11	L402	D6	R411	C5
C334	H11	L405	D4	R412	E6
C335	J10	P3001	A7	R413	E5
C336	J10	P3002	A11	R414	E5
C337	I10	P3003	A11	R415	E6
C338	I10	Q201	P5	R416	E5
C339	I10	Q202	D5	R417	F5
C340	H10	Q301	H4	R418	F4
C341	H10	Q302	I5	R419	D3
C342	C10	Q303	L9	R420	D3
C343	G10	Q304	J10	R421	C3
C344	G10	Q305	J4	R422	F4
C345	D10	Q3A1	D7	R424	D6
C346	D10	Q3A2	C7	R425	F11
C348	D7	Q401	D5	R427	E11
C350	D7	Q402	D5	R428	E11
C351	L7	Q403	D5	R429	E11
C352	L6	Q404	D5	R430	F11
C353	I4	Q405	C4	R431	C6
C354	I10	R201	G11	R450	E11
C355	D10	R204	P6	R490	D11
C358	H10	R205	O6	R491	D11
C363	H4	R206	O6	TL401	E3
C367	B8	R207	M6	X201	N6
C368	C9	R208	M6	X301	G10
C369	J5	R209	N6		
C370	J4	R210	O6		
C371	I11	R211	O9		

< * OPTIONAL TABLE >

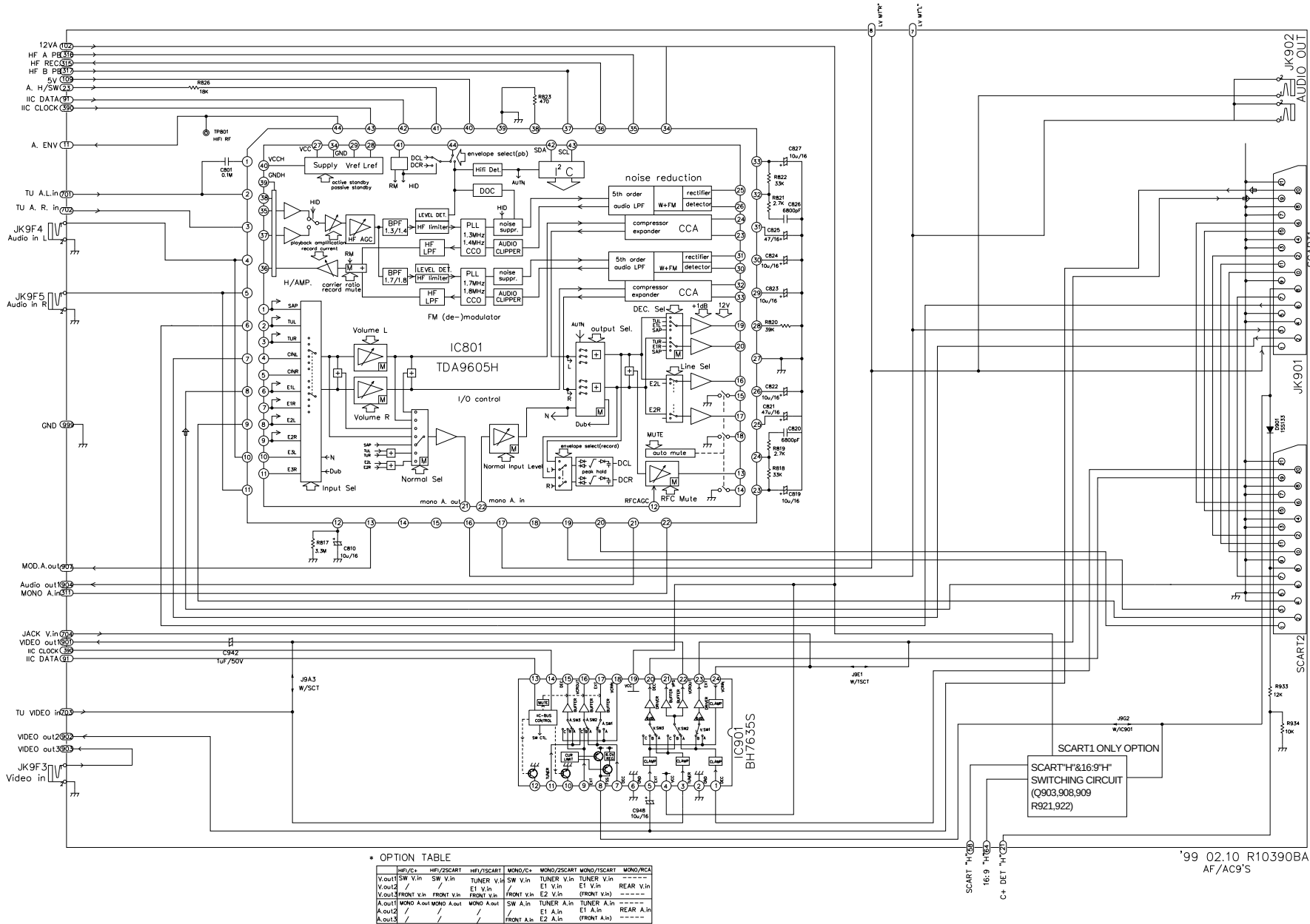
MODEL	PARTS	P3001	P3002	P3003	R337	C301	C3B1	R313	R3B1	R317	USE C303	USE C305
2HD W/LP	561-2341	X	O	100K	1U/50	0.1U/	330	3.3K	100K	O		
2HD W/O LP	561-2341	X	O	68K	0.1U/AX	0.047U/	330	2.7K	82K	X		
4HD	561-2348	O	X	68K	0.47U/75C	0.047U/	270	4.7K	100K	O		

'99 05. 20 R10386B
AF20V40'S (MONO)

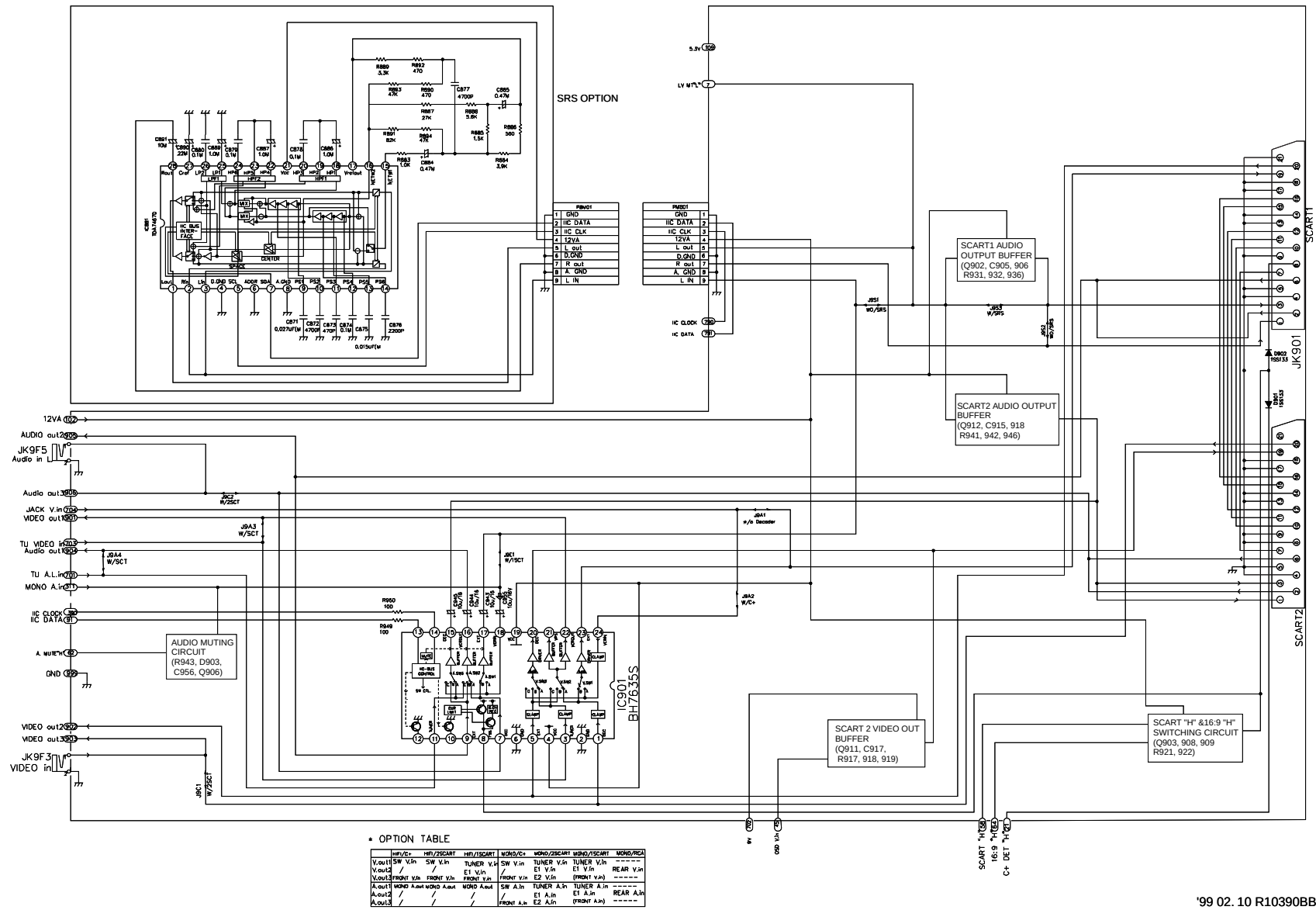
4. Hi-Fi Block Diagram



4. Hi-Fi, SCART Block Diagram

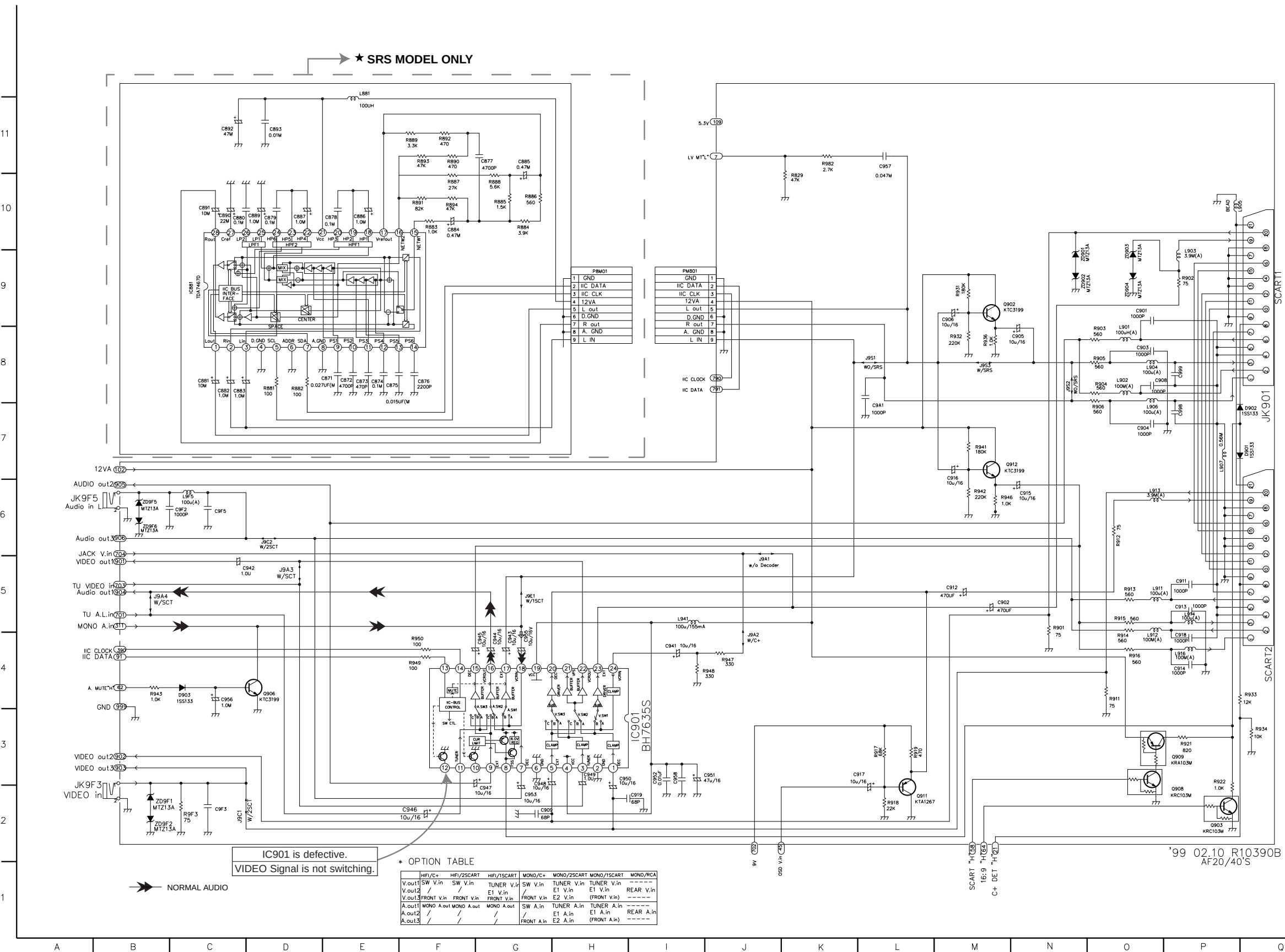


5. SCART & SRS Block Diagram



'99 02. 10 R10390BB

5. SCART & SRS Circuit Diagram



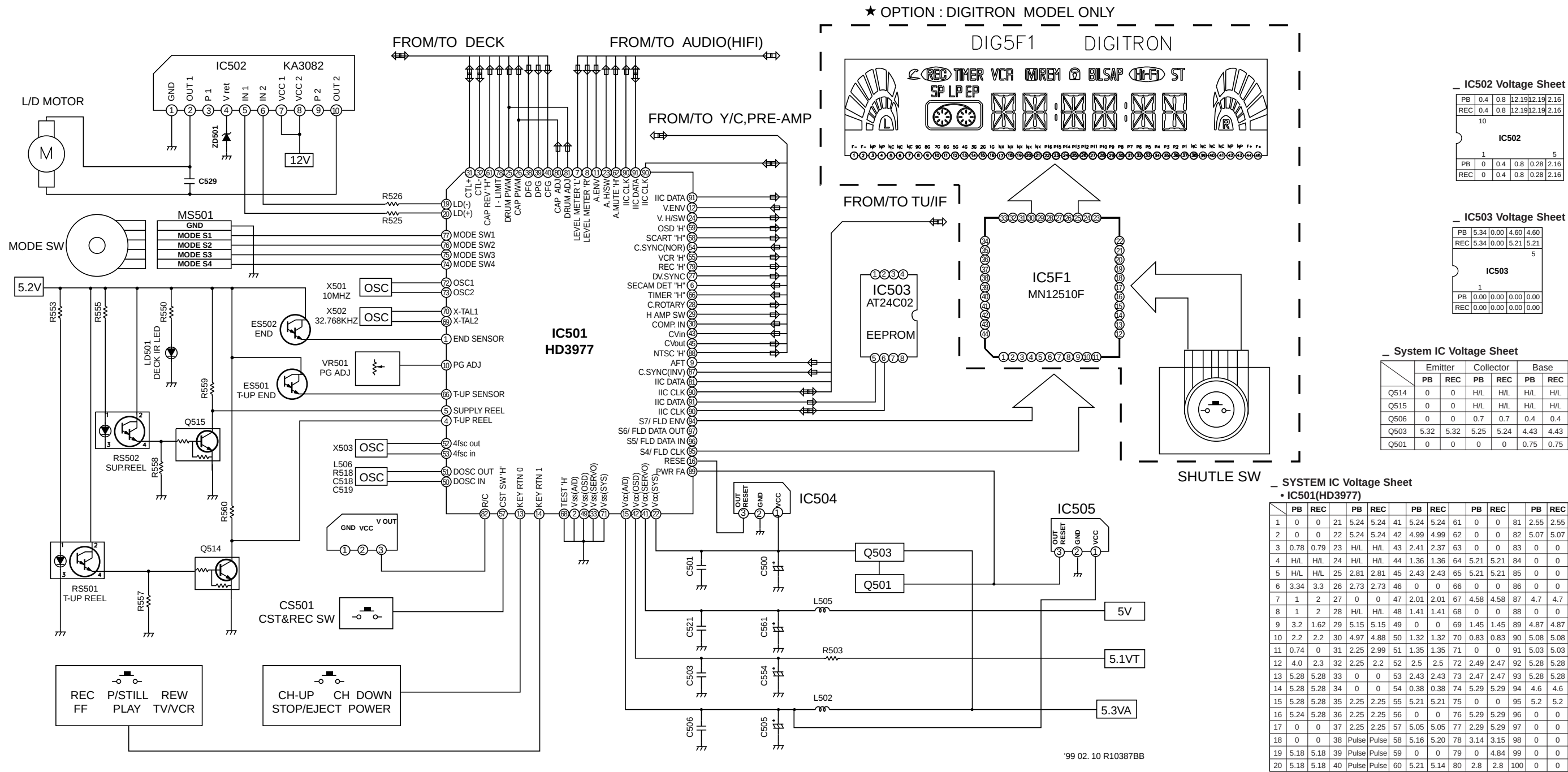
LOCATION GUIDE

C871	D8	L941	I5
C872	E8	L9F5	C6
C873	E8	PM801	I9
C874	E8	PM801	I9
C875	E8	Q902	M9
C876	F8	Q903	P2
C877	G11	Q906	D4
C878	D10	Q908	P2
C879	D10	Q909	P3
C880	C10	Q911	L2
C881	C8	Q912	M7
C882	C8	R829	K10
C883	C8	R881	D8
C884	F10	R882	D8
C885	G11	R883	F10
C886	E10	R884	G10
C887	D10	R885	G10
C889	C10	R886	G10
C890	C10	R887	F10
C891	C10	R888	G10
C892	C11	R889	F11
C893	D11	R890	F11
C901	O9	R891	F10
C902	M5	R892	F11
C903	O8	R893	F11
C904	O7	R894	F10
C905	M8	R901	N5
C906	M9	R902	P9
C908	O8	R903	O8
C909	G2	R904	O8
C911	P2	R905	O8
C912	M5	R906	O7
C913	P5	R911	O4
C914	P4	R912	O6
C915	N6	R913	O5
C916	M7	R914	O4
C917	K3	R915	O5
C918	P4	R916	O4
C919	H2	R917	L3
C941	I4	R918	L2
C942	C5	R919	L3
C943	G4	R921	P3
C944	G4	R922	P3
C945	G4	R931	M9
C946	F2	R932	M8
C947	G2	R933	O4
C948	G3	R934	O3
C949	H3	R936	M8
C950	H3	R941	M7
C951	I3	R942	M6
C952	I3	R943	B4
C953	G2	R946	M6
C955	G4	R947	J4
C956	C4	R948	I4
C957	L11	R949	F4
C958	I3	R950	F4
C959	P7	R951	K11
C959	P8	R952	C2
C9A1	L7	ZD901	N9
C9F2	C6	ZD902	N9
C9F3	C2	ZD903	O9
C9F5	C6	ZD904	O9
D901	O7	ZD9F1	B2
D902	O7	ZD9F2	B2
D903	C4	ZD9F5	B6
IC881	C9	ZD9F6	B6
IC901	I3		
J9A1	J5		
J9A2	J4		
J9A3	D5		
J9A4	B5		
J9C1	C2		
J9C2	D6		
J9E1	G5		
J9S1	LB		
J9S2	N8		
J9S3	M8		
JK901	Q7		
JK9F3	A2		
JK9F5	A6		
L881	E12		
L901	O8		
L902	O8		
L903	P9		
L904	O8		
L905	P10		
L906	O7		
L907	P7		
L911	O5		
L912	O4		
L913	O6		
L914	P5		
L916	P4		

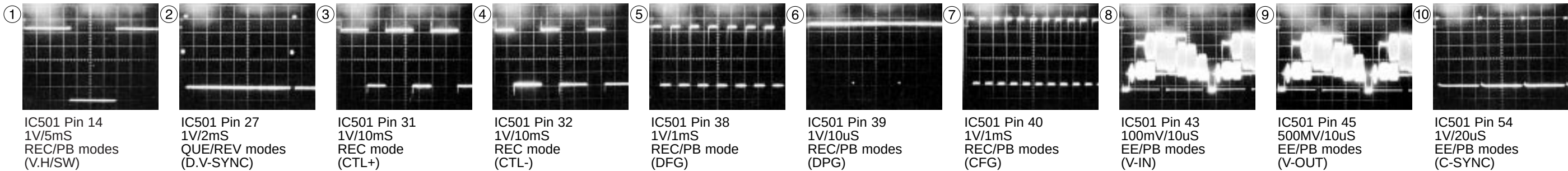
IC901 Voltage Sheet

PB	3.6	4.4	4.2	0.9	5.1	0.0	0.0	0.7	0.6	0.7	11.9	3.9
REC	1.9	4.4	4.1	0.9	5.0	0.0	4.2	4.3	4.2	4.3	12.0	3.9
20												
15												
5												
PB	3.8	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.8	3.8	0.0
REC	3.8	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.9	3.9	0.0

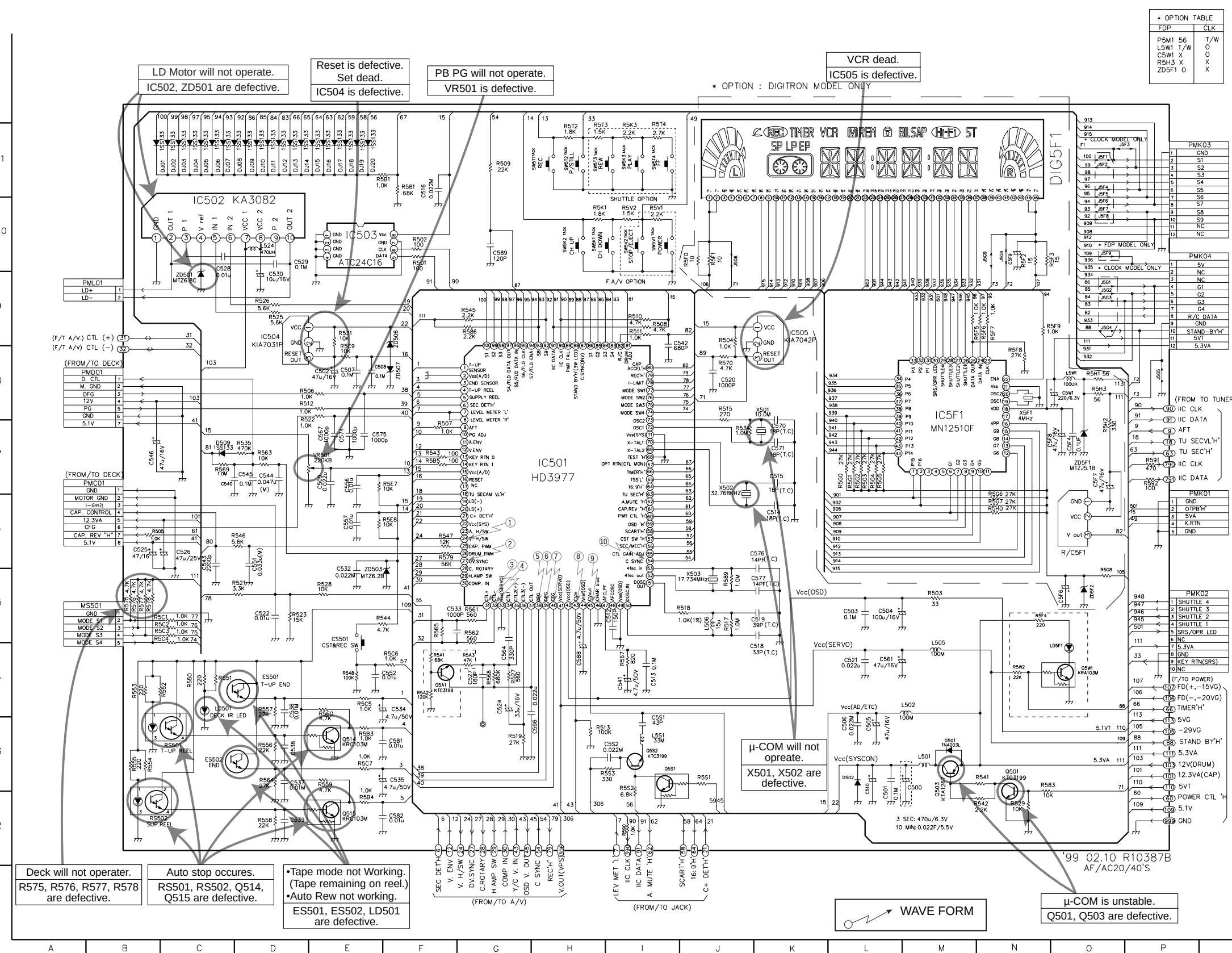
6. System Block Diagram



* IC501 Waveform Photographs



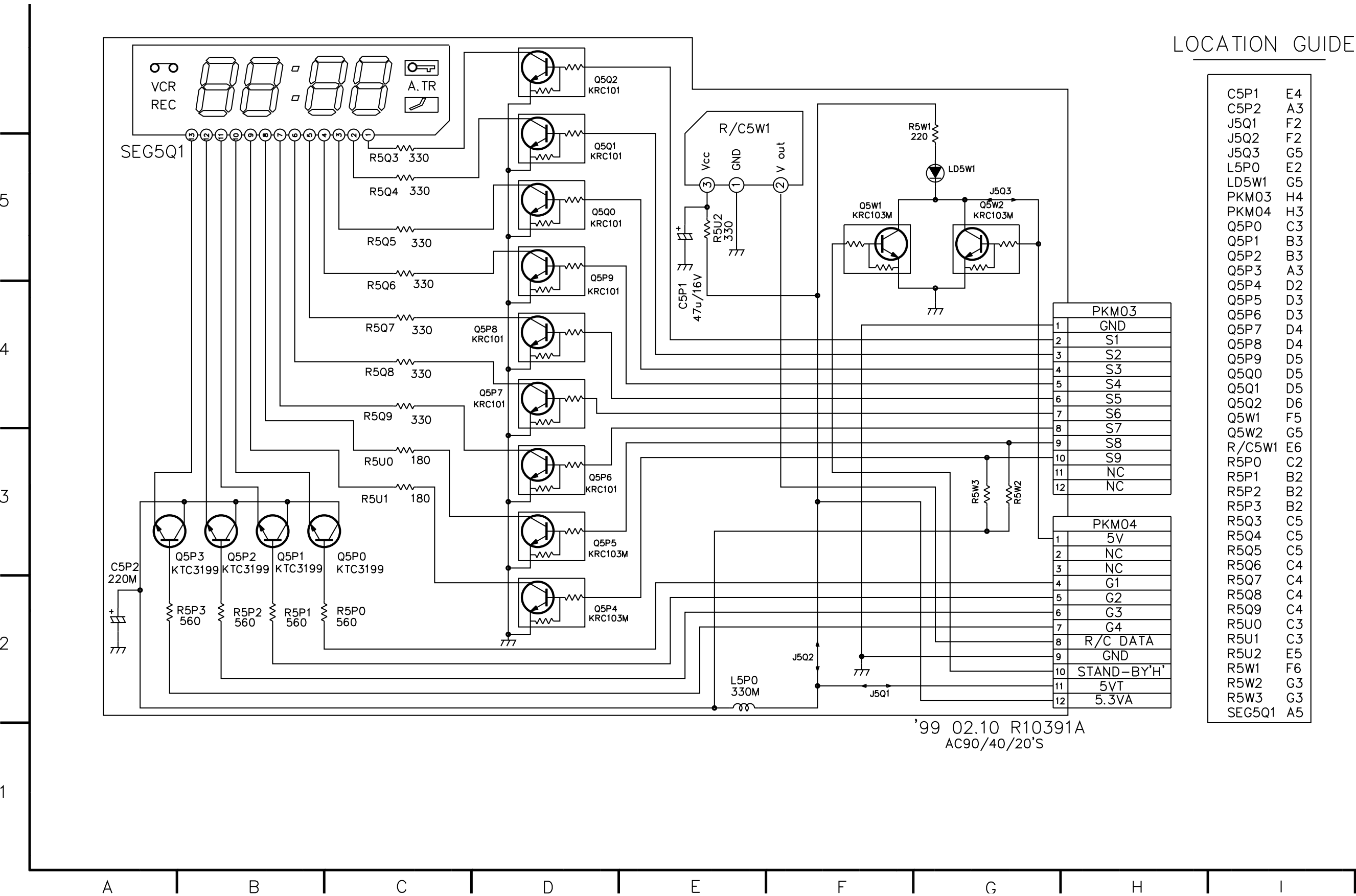
6. System Circuit Diagram



C500	M3	D0C5F1	O11	05A1	F4	RS41	F4
C501	L2	D0J1	C11	05S1	13	RS42	F4
C502	E8	D0J2	C11	05S2	13	RS43	G4
C503	L5	D0J3	C11	05W1	04	RSB1	E11
C504	L5	D0J4	C11	R/C5F1	06	RSB3	E3
C505	L3	D0E5	C11	RS01	10	RSB4	E11
C506	L3	D0E6	C11	R502	F10	RSB5	F7
C507	E8	D0J7	C11	R503	M5	RS1	B5
C508	E8	D0J8	D11	R504	J9	RS2	B5
C509	E8	D0J9	D11	R505	B6	RS3	B5
C510	L2	D0J10	D11	R506	D8	RS4	B5
C512	I5	D0J11	D11	R507	F7	RS5	E4
C513	I4	D0J12	D11	R508	J9	RS6	F4
C514	K6	D0J13	D11	R509	G11	RS7	F4
C515	K7	D0J14	E11	R510	J9	RS9	E8
C516	F11	D0J15	E11	R511	J9	RS7	F7
C518	J4	D0J16	E11	R512	D8	RS8	F6
C519	J4	D0J17	E11	R513	H3	RS9	F0
C520	J8	D0J18	E11	R515	H8	RSF1	J10
C521	L4	D0J19	E11	R517	J5	RSF2	N10
C522	E5	D0J20	E11	R518	I5	RSF3	O10
C523	E5	ES501	C3	R519	G3	RSF4	N9
C525	B6	ES502	C3	R521	C5	RSF5	N9
C526	C6	F1	J9	R522	D7	RSF6	N9
C527	G4	F1	O11	R523	D9	RSF7	N9
C528	I10	F2	N9	R525	D9	RSF8	N9
C529	D10	F3	P8	R526	D9	RSF9	N9
C530	D9	F3	P8	R527	G4	RS0	L7
C532	E5	F3	N9	R528	E5	RS01	L7
C533	E5	IC501	C10	R529	N2	RS02	L7
C534	F4	IC502	C10	R531	J9	RS03	L7
C535	F3	IC503	E10	R534	J7	RS04	L7
C536	D3	IC504	D9	R535	D7	RS05	L7
C537	D3	IC505	E10	R536	M3	RS06	N6
C538	D3	IC5F1	M8	R542	M2	RS07	N6
C539	D2	J5F1	O11	R543	F7	RS08	O5
C540	C7	J5F2	O11	R544	E5	RS0	N6
C541	C7	J5F3	O11	R545	G9	RS1	N6
C542	I9	J5F4	O11	R546	O6	RS2	O7
C543	C5	J5F5	O11	R547	F6	RS3	O8
C544	D7	J5F6	O10	R548	E4	RSK1	H10
C545	D7	J5F7	O10	R549	C4	RSK2	H10
C546	B7	J5F8	O10	R551	C4	RS1	J3
C551	D5	J5F9	O10	R552	C4	RS2	J3
C552	E4	J5G1	O9	R553	B4	RS3	J3
C553	E4	J5G2	O9	R554	B4	RS4	J3
C557	E6	J5G3	O9	R555	B3	RS13	H11
C561	L4	J5G4	O9	R556	D3	RS14	H11
C564	G4	J5G5	P8	R557	D2	RSV1	I10
C565	G4	J5G6	P8	R558	D7	RSV2	I10
C570	K7	J5G8	N10	R559	E3	RSW2	N4
C571	K7	J5G9	N10	R560	E4	RS01	C3
C574	E7	L501	M3	R561	G5	RS02	B2
C575	E7	L502	M3	R562	G5	RS03	B2
C576	J6	L505	M4	R563	D7	SWK2	H10
C577	J5	L506	J5	R564	D3	SWK3	H11
C581	F3	L524	D10	R565	F5	SW51	H11
C582	F3	L525	D10	R567	I4	SW52	H11
C588	H4	L5W1	O8	R568	G4	SW513	H11
C589	G10	LD501	C4	R569	C7	SW514	H11
C596	H3	LD5F1	N4	R570	H8	SW5V1	I10
C597	H3	MD501	C4	R571	B5	SW5V2	I10
C5F6	O5	PMD01	A7	R575	B5	VR501	E7
C5F7	O7	PMD01	A8	R577	B5	X501	K8
C5F8	O7	PMK01	P6	R578	B5	X502	J7
C5F9	N10	PMK02	P10	R579	F6	X503	J7
C5S1		PMK03	P11	R581	F11	XF51	N8

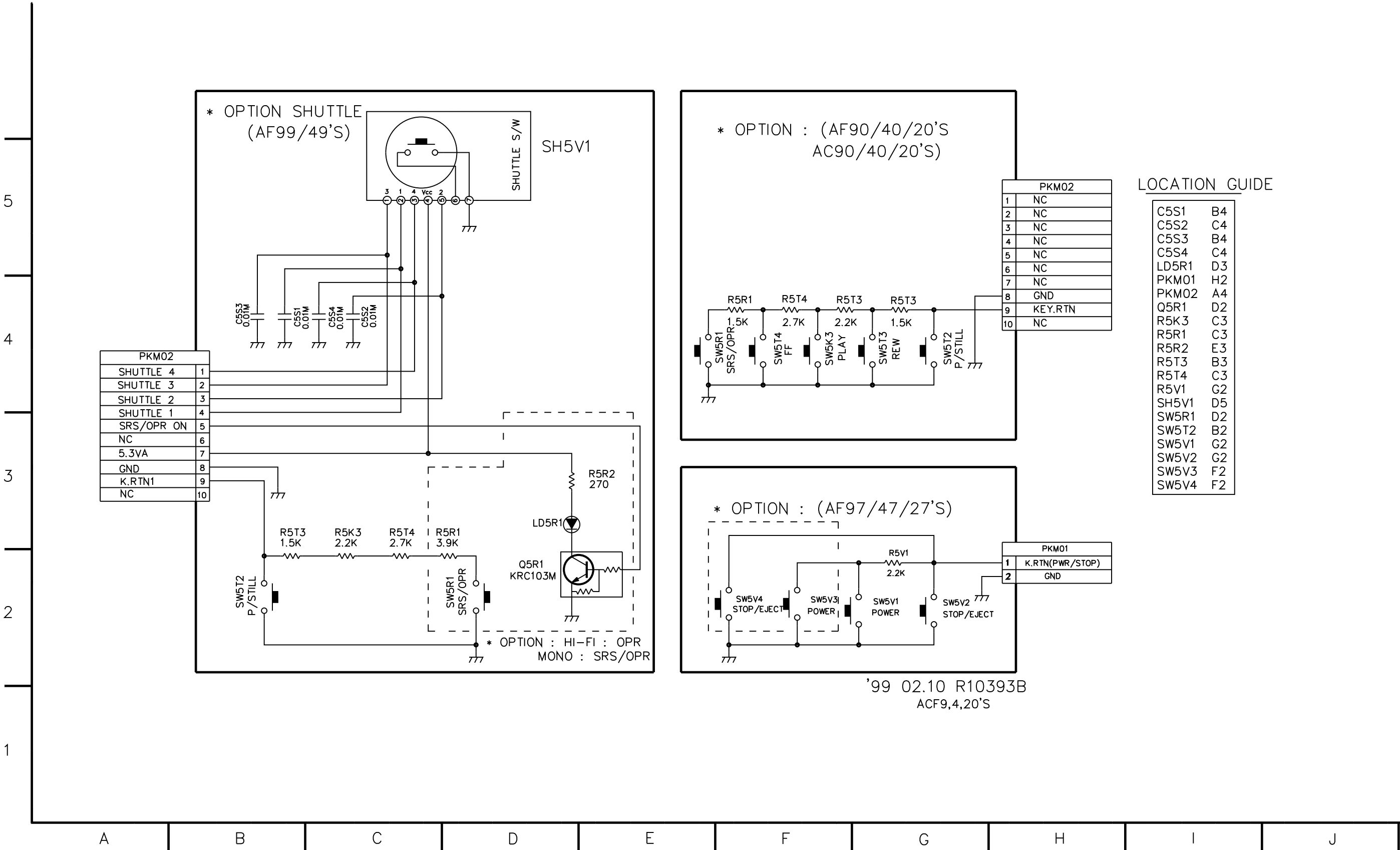
		HI-FI	MONO		
	1	F =			
	2	F =			
①	4	NP	1	F =	1 GND
②	5	NC	2	F =	2 S1
③	6	NC	3	NP	4 S3
④	7	NC	4	NP	5 S4
⑤	8	G9	5	NC	6 S5
⑥	9	G8	6	G7	7 S6
⑦	10	G7	7	G6	8 S7
⑧	11	G6	8	G5	9 S8
⑨	12	G5	9	G4	10 S9
⑩	13	G4	10	G3	11 NC
⑪	14	G3	11	G2	12 NC
⑫	15	G2	12	G1	
⑬	16	G1	13	NX	
⑭	17	NX	14	NX	
⑮	18	NX	15	NX	
⑯	19	NX	16	NX	
⑰	20	NX	17	NX	
⑱	21	NX	18	NX	
⑲	22	S16	19	S16	
⑳	23	S15	20	S15	
㉑	24	S14	21	S14	
㉒	25	S13	22	S13	
㉓	26	S12	23	S12	
㉔	27	S11	24	S11	
㉕	28	S10	25	S10	
㉖	29	S9	26	S9	
㉗	30	S8	27	S8	
㉘	31	S7	28	S7	
㉙	32	S6	29	S6	1 5V
㉚	33	S5	30	S5	2 NC
㉛	34	S4	31	S4	3 NC
㉜	35	S3	32	S3	4 R/C DATA
㉝	36	S2	33	S2	5 G2
㉞	37	S1	34	S1	6 G3
㉟	38	NC	35	NP	7 G4
㊱	39	NC	36	NP	8 R/C DATA
㊲	40	NC	37	F =	9 GND
㊳	41	NC	38	F =	10 S/BY LED
㊴	42	NP	39	F =	11 5V1
㊵	43	NP	40	F =	12 5.3VA
㊶	44	F =			
㊷	45	F =			

8. LED CLOCK Circuit Diagram (AC270Y/280Y/470Y/480Y)



'99 02.10 R10391A
AC90/40/20'S

7. SHUTTLE & KEY Circuit Diagram



SECTION 4 MECHANISM

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MACHANISM TROUBLESHOOTING GUIDE

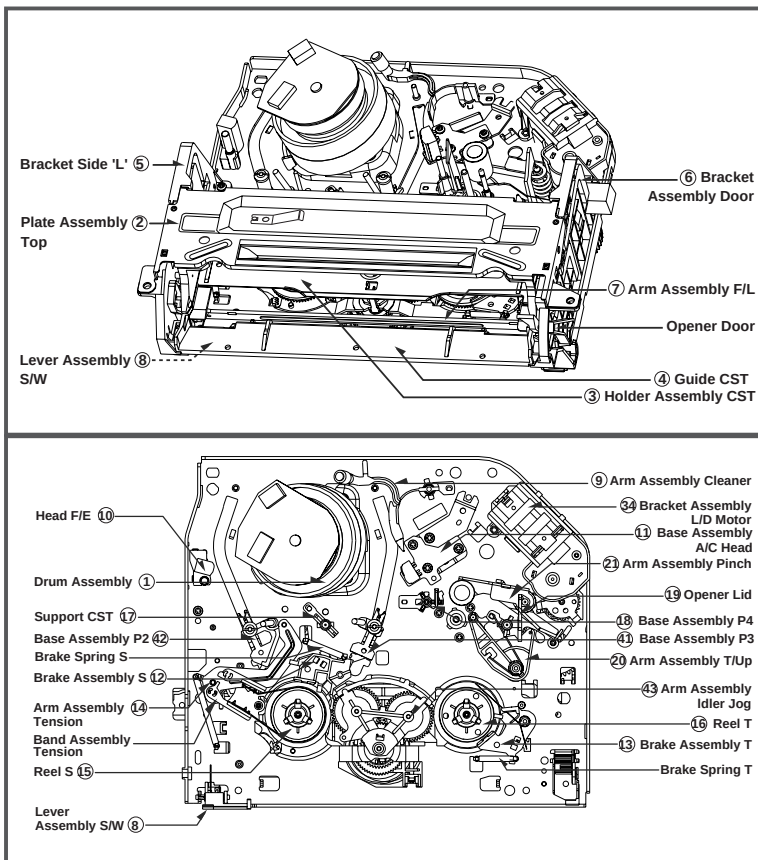
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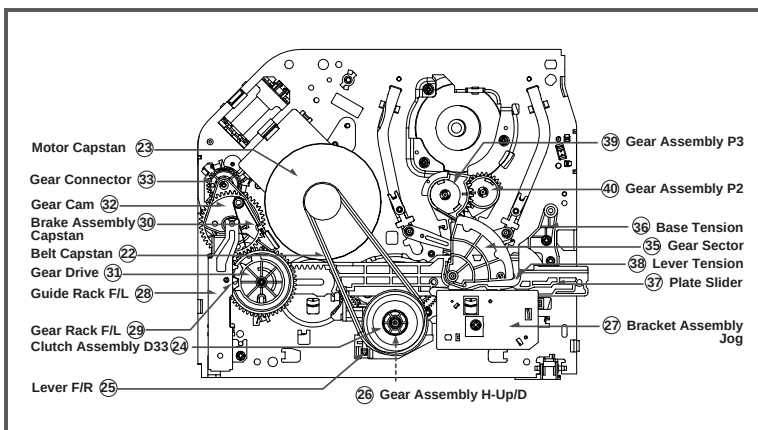
DECK MECHANISM PARTS LOCATIONS

• Top View



Pracedure		Part	Fixing Type	Fig-ure
Starting No.				
2	1	Drum Assembly	3 Screws , Cap FPC	A-1
	2	Plate Assembly Top	Two Hooks	A-2
2,3,4	3	Holder Assembly CST	Chassis Hole	A-2
	4	Guide CST	2 Hooks	A-2
2,3,4	5	Bracket Side (L)	1 Screw	A-2
	6	Bracket Assembly Door	1 Screw	A-2
2,3,4,5,6	7	Arm Assembly F/L	Chassis Hole	A-2
	8	Lever Assembly S/W	Chassis Hole	A-2
2,3,4,5	9	Arm Assembly Cleaner	Chassis Embossing	A-3
	10	Head F/E	2 Hooks	A-3
2,3	11	Base Assembly A/C Head	1 Screw	A-3
	12	Brake Assembly S	Chassis Hole	A-4
2,3,12	13	Brake Assembly T	Chassis Hole	A-4
	14	Arm Assembly Tension	Chassis Hole	A-4
2,3,12,14	15	Reel S	Chassis Shaft	A-4
	16	Reel T	Chassis Shaft	A-4
2,3,13	17	Support CST	Chassis Embossing	A-5
	18	Base Assembly P4	Chassis Embossing	A-5
19	19	Opener Lid	Chassis Embossing	A-5
	20	Arm Assembly T/Up	Chassis Embossing	A-5
19	21	Arm Assembly Pinch	Chassis Shaft	A-5

• Bottom View



NOTE : When reassembly perform the procedure in the reverse order.

- 1) When reassembling, confirm Mechanism and Mode Switch Alignment Position (Pefer to Page 4-14)
- 2) When disassembling, the Parts for Starting No. Should be removed first.

Pracedure		Part	Fixing Type	Fig-ure
Starting No.				
22	22	Belt Capstan	3 Screws	A-6
	23	Motor Capstan	1 Washer	A-6
22,24	24	Clutch Assembly D33	1 Hook	A-6
	25	Lever F/R	2 Washers	A-6
22,24	26	Gear Assembly H-Up/D	1 Screw	A-7
	27	Bracket Assembly Jog	1 Screw	A-7
28	28	Guide Rack F/L	Chassis Shaft	A-7
	29	Gear Rack F/L	Chassis Shaft	A-7
28, 29	30	Brake Assembly Capstan	1 Washer	A-8
	31	Gear Drive	Chassis Shaft	A-8
28, 29, 30	32	Gear Cam	Chassis Shaft	A-8
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28, 29, 30, 31	34	Bracket Assembly L/D Motor	3 Hooks	A-8
	35	Gear Sector	3 Washers	A-9
22, 24, 25, 27	36	BaseTension	1 Screw	A-9
	37	Plate Slider	Chassis Shaft	A-9
28, 29, 31, 35	38	Lever Tension	Chassis Hole	A-9
	39	Gear Assembly P3	2 Hooks	A-10
35, 39	40	Gear Assembly P2	2 Hooks	A-10
	41	Base Assembly P3	Chassis Hole	A-10
35, 39, 40, 41	42	Base Assembly P2	Chassis Hole	A-10
	43	Arm Assembly Idler Jog	1 Hook	A-10

DECK MECHANISM DISASSEMBLY

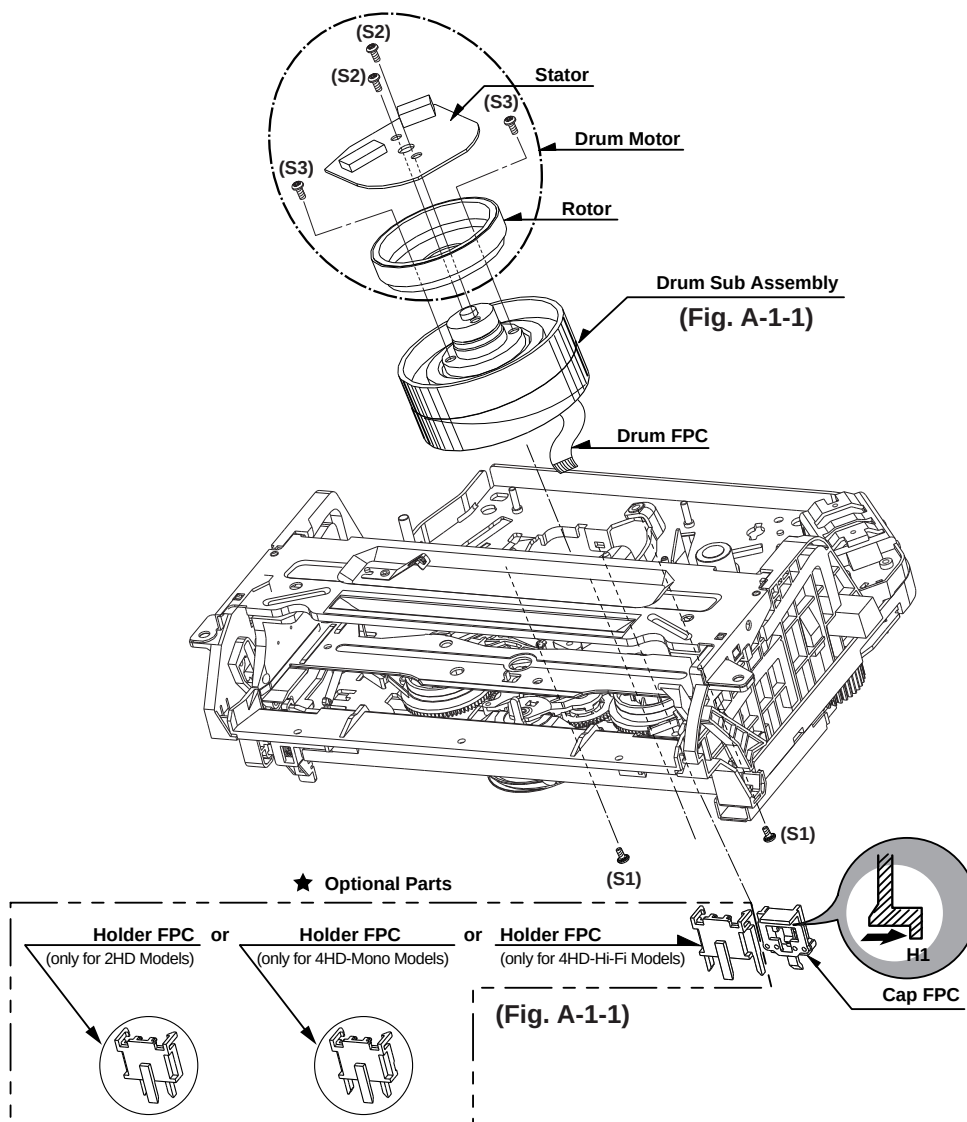


Fig. A-1

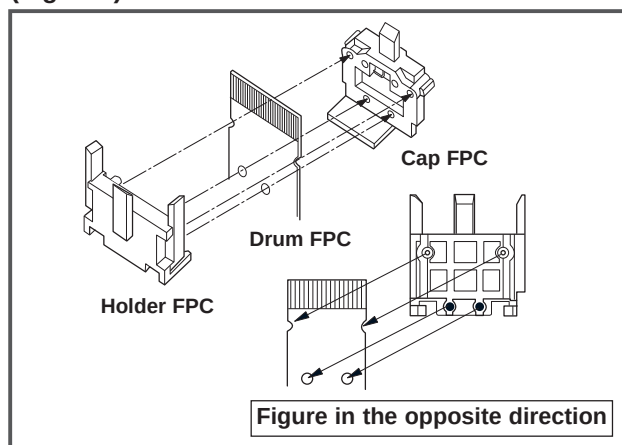
1. Drum Assembly (Fig. A-1-1)

- 1) Unhook the (H1) on the back side of the Chassis and separate the Cap FPC.
- 2) Remove three Screws (S1) and lift up the Drum Assembly.
- 3) Remove two Screws (S2) and Separate the Stator of Drum Motor.
- 4) Remove two Screws (S3) and Separate the Rotor of Drum Motor from the Drum Sub Assembly.

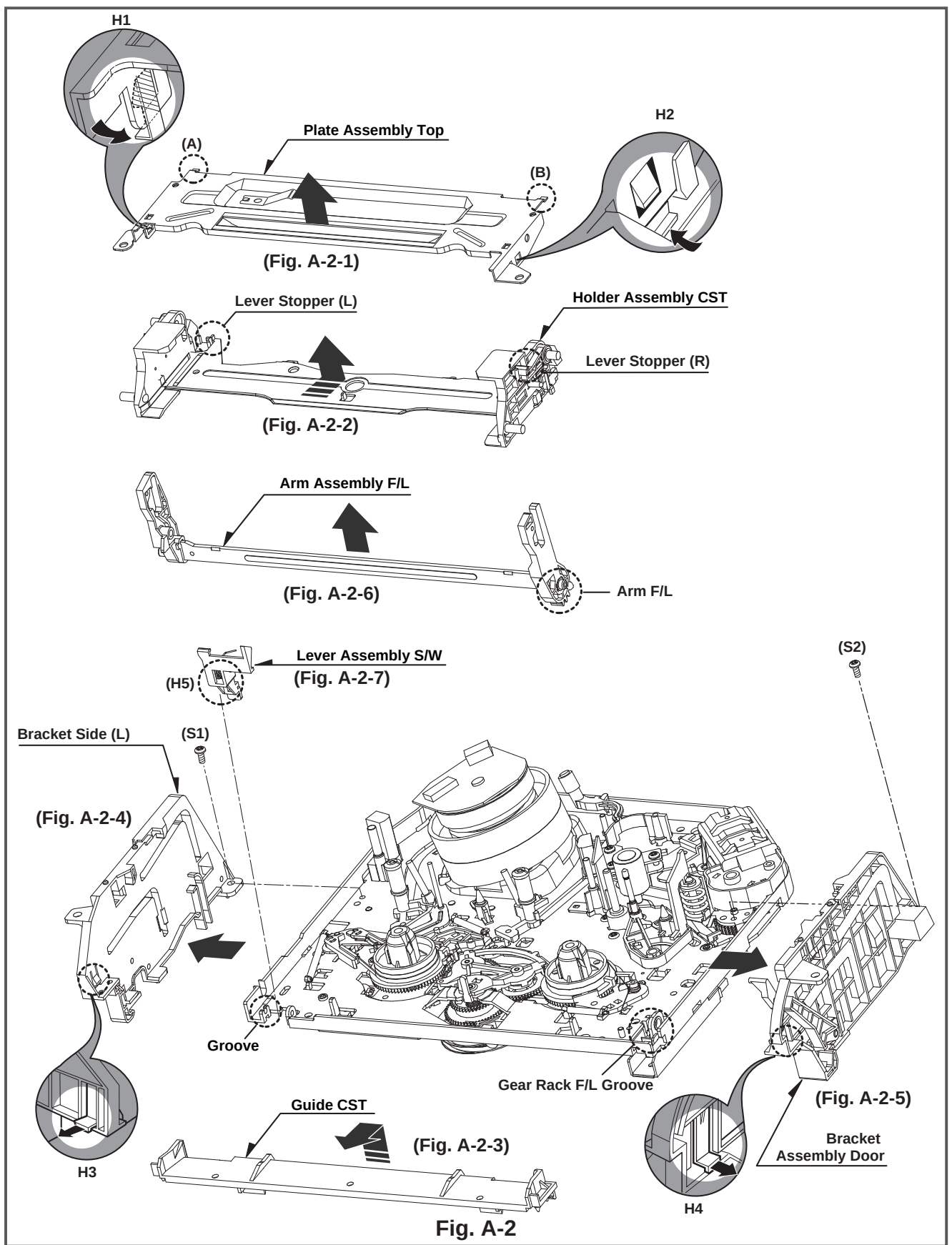
NOTE

- (1) When reassembling Cap FPC, two Holes of Drum FPC are inserted to the two Bosses of Holder FPC correctly. (Refer to Fig. B-1)

(Fig. B-1)



DECK MECHANISM DISASSEMBLY



DECK MECHANISM DISASSEMBLY

2. Plate Assembly Top (Fig. A-2-1)

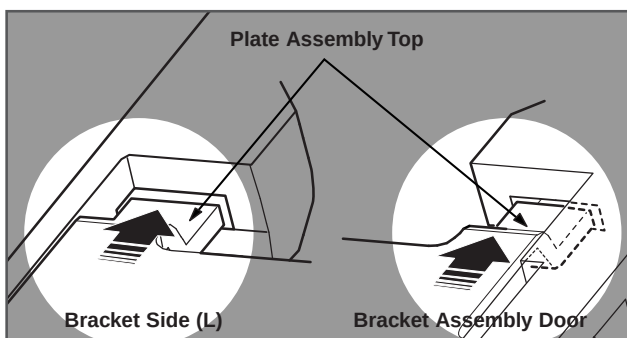
- 1) Unhook the (H1) and separate the Left Side.
- 2) Unhook the (H2) and lift up the Plate Assembly Top.

NOTE

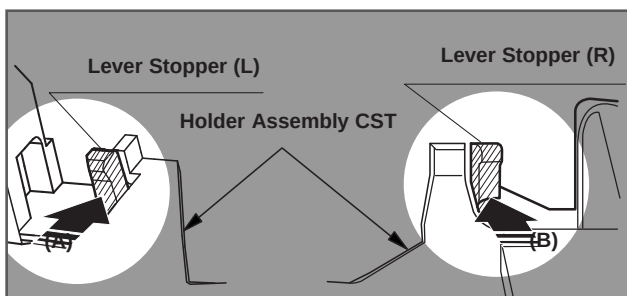
- (1) When reassembling, confirm (A),(B) Part of the Plate Assembly Top is inserted to the (L),(R) Grooves of the Bracket Side(L) and Bracket Assembly Door.

3. Holder Assembly CST (Fig.A-2-2)

- 1) Push the Lever Stopper(L),(R) in the direction of the arrows (A), (B), and move the Holder Assembly CST.

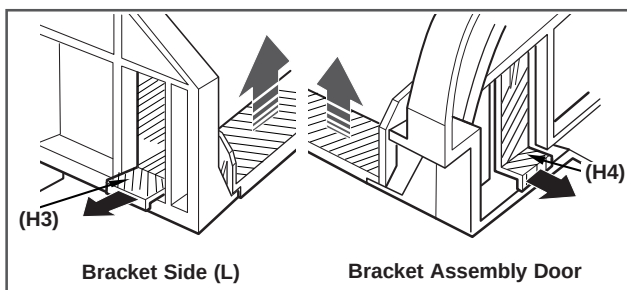


- 2) Push the Bracket Assembly Door to the right and lift up the Holder Assembly CST along the Guide Groove of the Bracket Assembly Door.



4. Guide CST (Fig.A-2-3)

- 1) Push two Hooks(H3),(H4) in the direction of the arrow and separate the left side.
- 2) Unhook (H5),(H6) as above No.1) and disassemble the Guide CST in the direction of the arrow.



5. Bracket Side(L) (Fig. A-2-4)/ Bracket Assembly Door (Fig.A-2-5)

- 1) Remove the Screw (S1) and disassemble the Bracket Side(L) in the front.

- 2) Remove the Screw (S2) and disassemble the Bracket Assembly Door in the front.

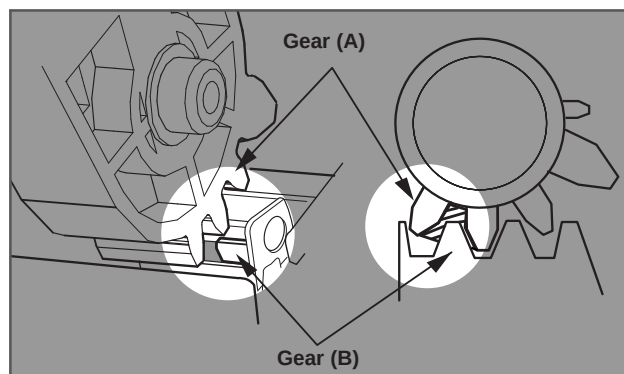
6. Arm Assembly F/L (Fig. A-2-6)

- 1) Push the Arm Assembly F/L to the left and lift up it.

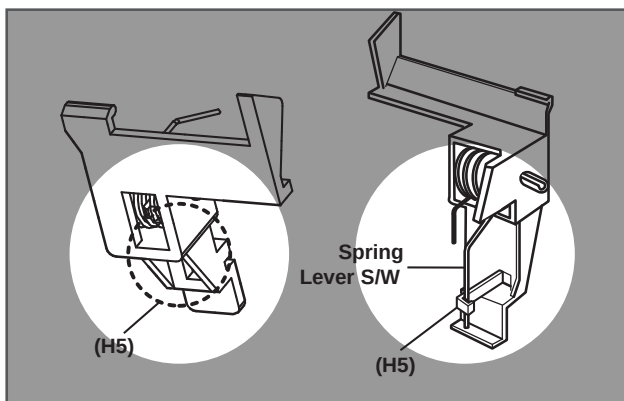
NOTE

- (1) When reassembling, confirm that the Gear(A) of the Arm F/L and the Gear(B) of the Gear Rack F/L are assembled as below.

7. Lever Assembly S/W (Fig. A-2-7)

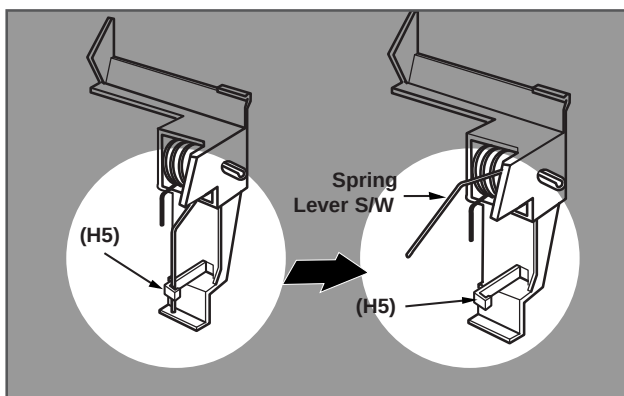


- 1) Hook the Spring Lever S/W on (H5).
- 2) Lift up the left side of the Lever S/W from the Groove(A) of the Chassis.



NOTE

- (1) Place the Spring Lever S/W of the above (No.1) as original position.



DECK MECHANISM DISASSEMBLY

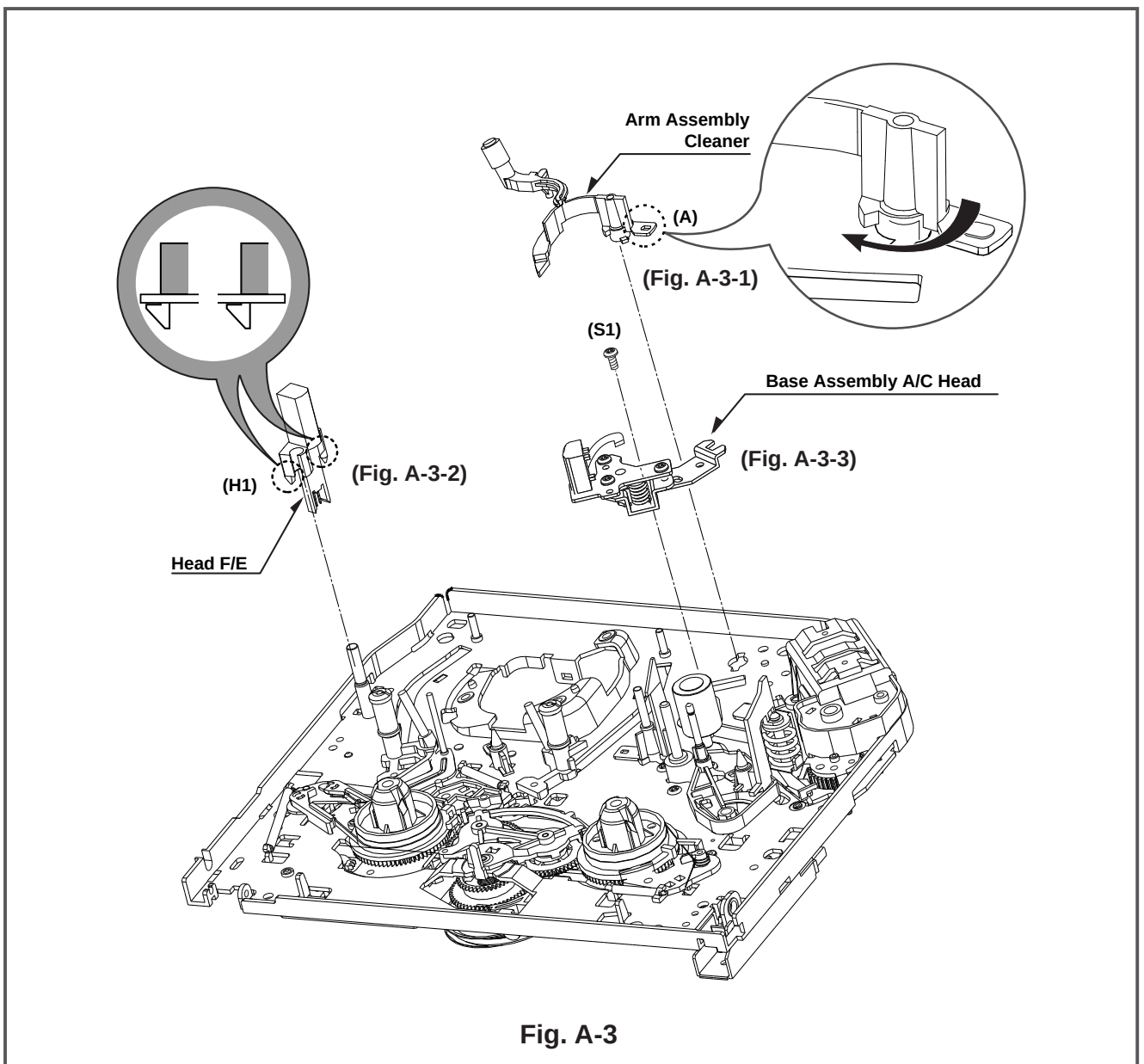


Fig. A-3

8. Arm Assembly Cleaner(Fig. A-3-1)

- 1) Break away the (A) part shown above Fig. A-3-1 from the Embossing of the Chassis in the clockwise direction and lift up the Arm Assembly Cleaner.

9. Head F/E (Fig. A-3-2)

- 1) Unhook the two Hooks (H1) on the back side of the Chassis and lift up the Head F/E.

10. Base Assembly A/C Head (Fig. A-3-3)

- 1) Remove the Screw (S1) and lift up the Base Assembly A/C Head.

DECK MECHANISM DISASSEMBLY

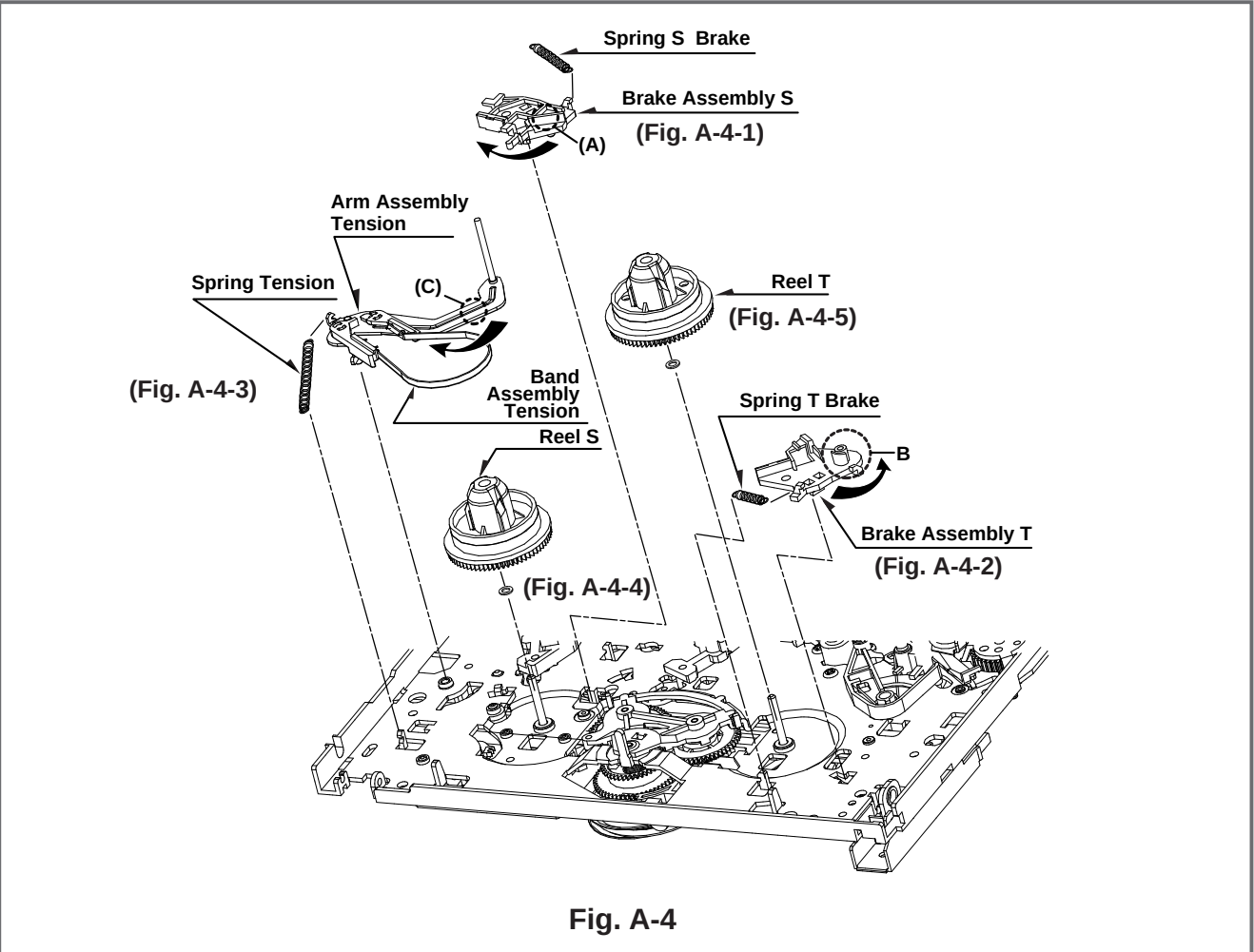


Fig. A-4

11. Brake Assembly S (Fig. A-4-1)

- 1) Remove the Spring S Brake.
- 2) Hold the (A) part shown above Fig. A-4-1 and turn to the clockwise direction, and then lift up the Brake Assembly S.

NOTE

- (1) When reassembling, be careful not to change the Spring with below No.12.(Refer to Fig. B-2).

12. Brake Assembly T (Fig. A-4-2)

- 1) Remove the Spring T Brake.
- 2) Hold the (B) part shown above Fig. A-4-2 and turn to the counterclockwise direction, and then lift up the Brake Assembly T.

NOTE

- (1) When reassembling, be careful not to change the Spring with above No.11.(Refer to Fig. B-2).

(Difference for Springs)

(Fig. B-2)

	Spring T Brake Color (Black)
	Spring S Brake
	Spring Tension

13. Arm Assembly Tension (Fig. A-4-3)

- 1) Remove the Spring Tension.
- 2) Hold the (C) part shown above Fig. A-4-3 and turn to the clockwise direction, and then lift up the Arm Assembly Tension.

NOTE

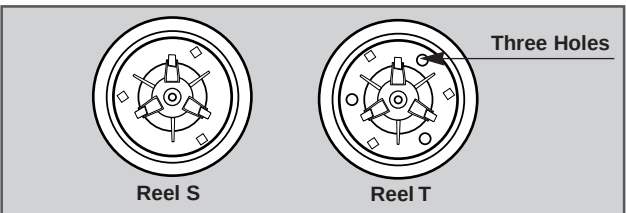
- (1) When reassembling, be careful not to change the Spring with above No.11,12.(Refer to Fig. B-2).

14. Reel S (Fig. A-4-4) & Reel T (Fig. A-4-5)

- 1) Lift up the Reel S and Reel T.

NOTE

- (1) When reassembling, be careful not to change the Reel S and Reel T each other.



- (2) Confirm two Slide Washers under the Reel S and Reel T.

DECK MECHANISM DISASSEMBLY

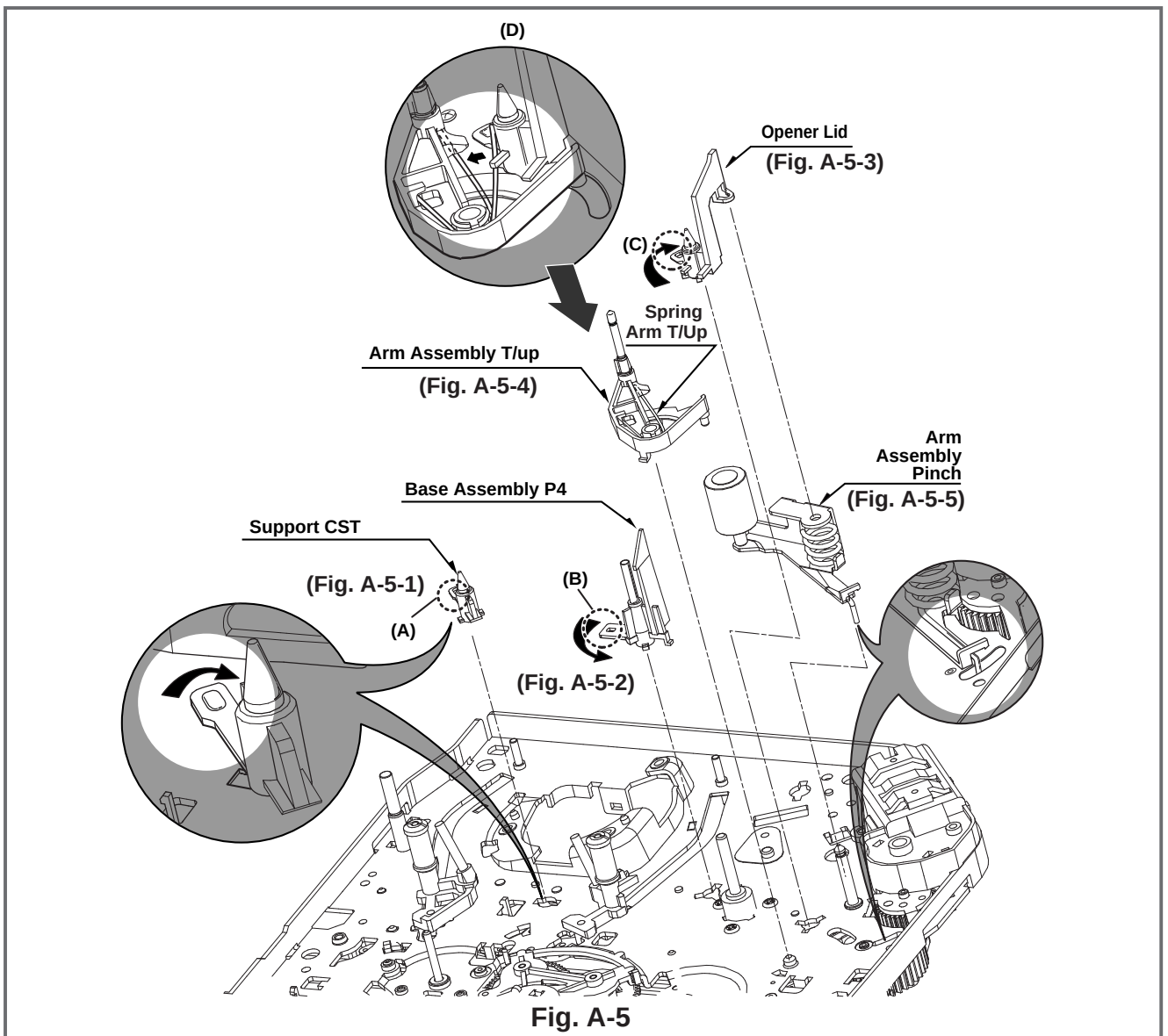


Fig. A-5

15. Support CST (Fig. A-5-1)

- 1) Break away the (A) part shown above Fig. A-5-1 from the Embossing of the Chassis in the clockwise direction, and lift up the Support CST.

16. Base Assembly P4 (Fig. A-5-2)

- 1) Break away the (B) part shown above Fig. A-5-2 from the Embossing of the Chassis in the counterclockwise direction and lift up the Base Assembly P4.

17. Opener Lid (Fig. A-5-3)

- 1) Hook the Spring Arm T/up on the Split digged under the Arm Assembly T/up.(Refer to Fig.A-5-4(D)).
- 2) Break away the (C) Part of the Opener Lid from the Embossing of the Chassis in the Clockwise direction and lift up the Opener Lid.

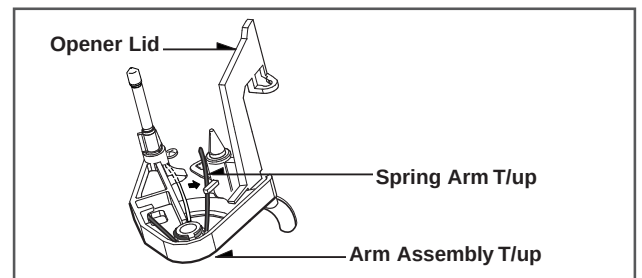
18. Arm Assembly T/up (Fig. A-5-4)

- 1) Confirm that the Spring Arm T/up is placed as above (No.17.1).

- 2) Lift up the Arm Assembly T/up.

NOTE

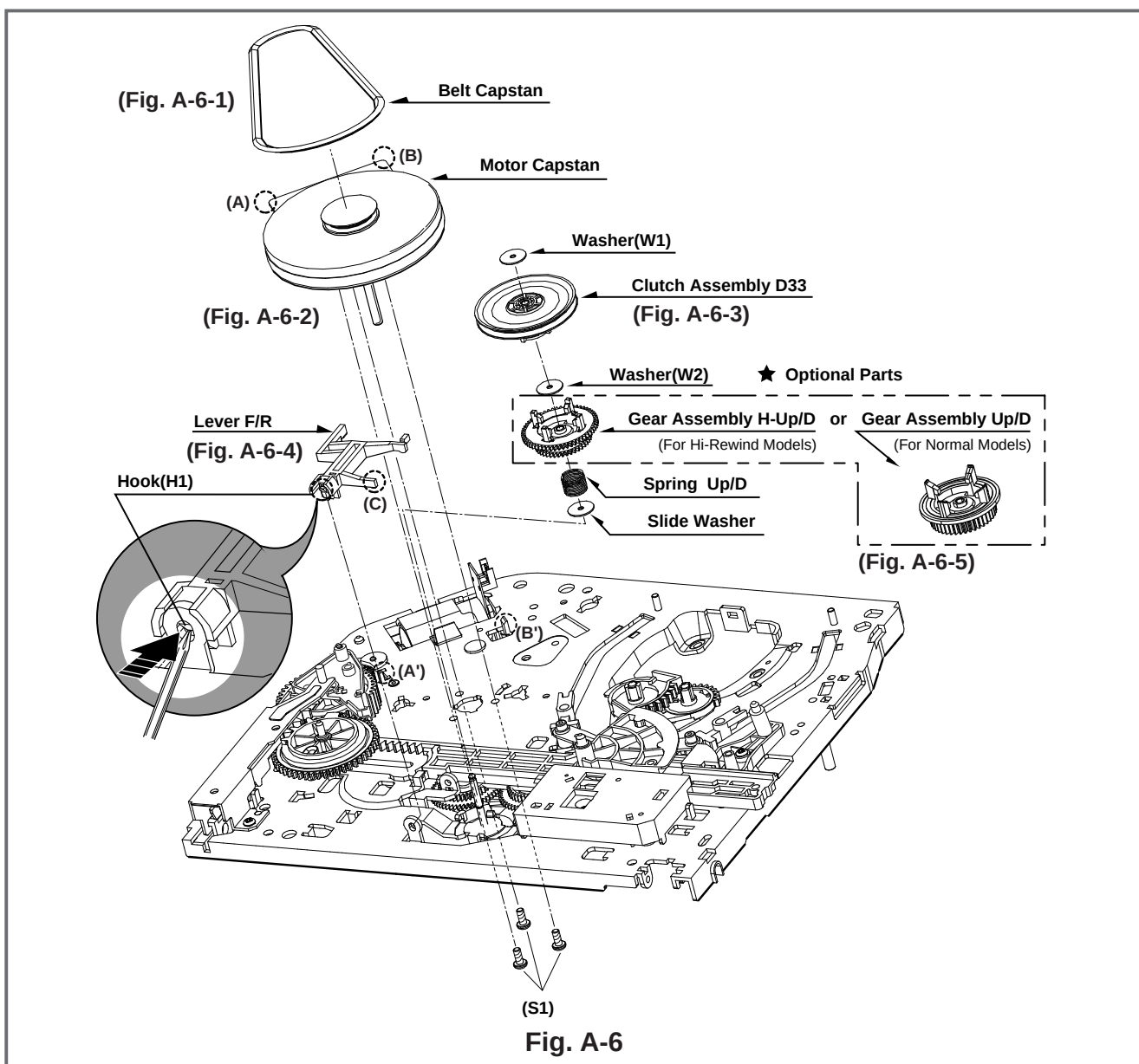
- (1) When reassembling, unhook the Spring Arm T/up Shown above (No.17.1) to the original position.



19. Arm Assembly Pinch (Fig. A-5-5)

- 1) Lift up the Arm Assembly Pinch.

DECK MECHANISM DISASSEMBLY



20. Belt Capstan (Fig. A-6-1)/ Motor Capstan (Fig. A-6-2)

- 1) Remove the Belt Capstan.
- 2) Remove three Screws(S1) on the back side of the Chassis and lift up the Motor Capstan.

NOTE

- (1) When reassembling, Confirm the (A), (B) parts of Motor Capstan is located to the (A'), (B') of the Chassis.

21. Clutch Assembly D33 (Fig. A-6-3)

- 1) Remove the Washer(W1) and lift up the Clutch Assembly D33.

22. Lever F/R (Fig. A-6-4)

- 1) Unhook the (H1) shown above Fig. A-6-4 and lift up the Lever F/R.

NOTE

- (1) When reassembling, move the (C) part of the Lever F/R up and down, then confirm if it is returned to original position.

23. Gear Assembly H-Up/D or Gear Assembly Up/D (Fig. A-6-5)

- 1) Remove the Washer(W2) and lift up the Gear Assembly H-up/D.
- 2) Remove the Spring Up/D.
- 3) Remove the Slide Washer.

NOTE

- (1) Gear Assembly H-Up/D is for Hi-Rewind Models.
- (2) Gear Assembly Up/D is for Normal Models except Hi-Rewind Models.

Fig. A-7

4-9

DECK MECHANISM DISASSEMBLY

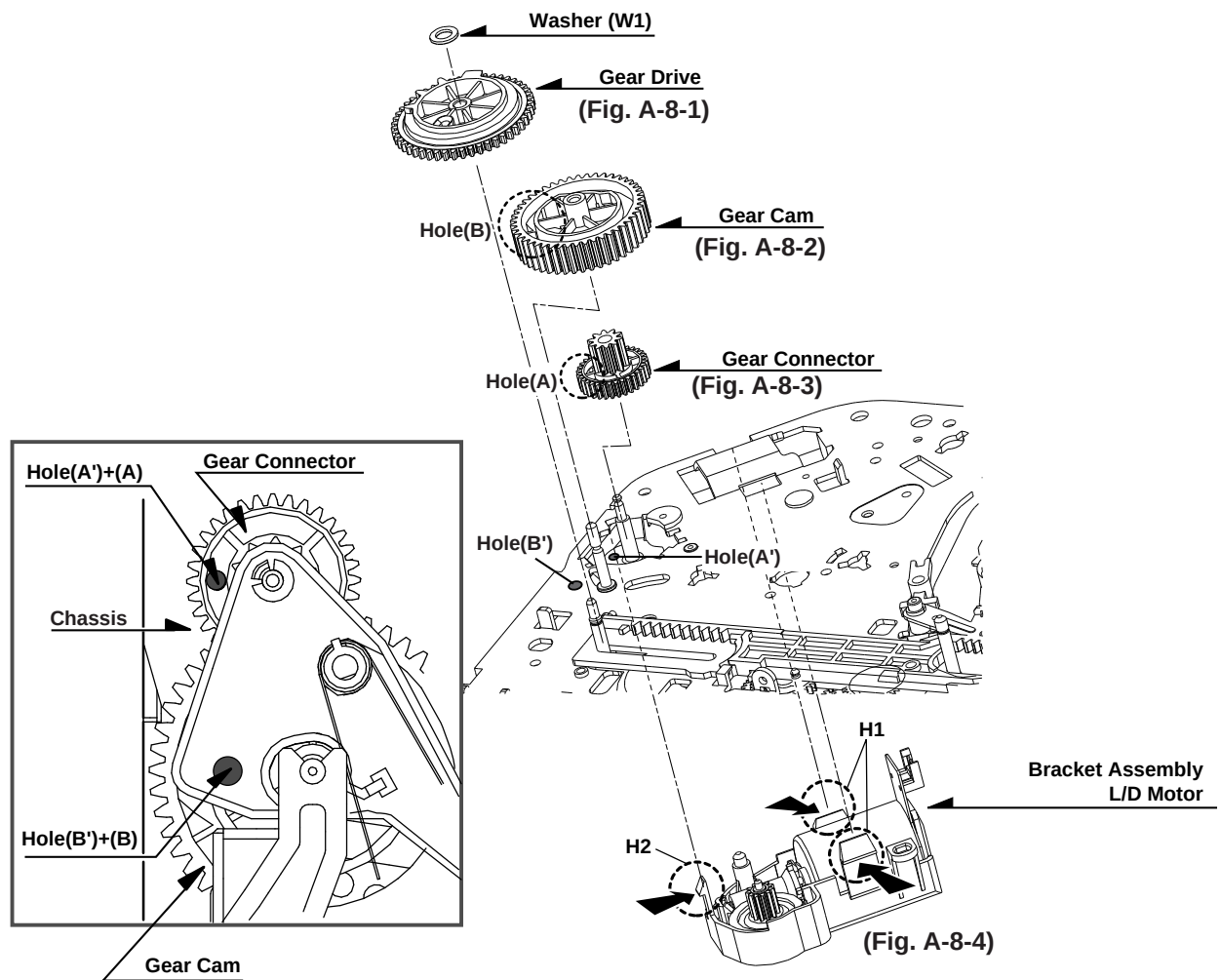


Fig. A-8

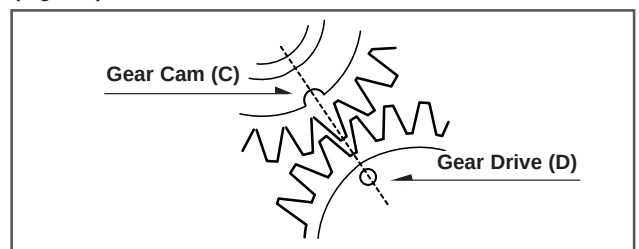
27. Gear Drive (Fig. A-8-1)/ Gear Cam (Fig. A-8-2)/ Gear Connector (Fig. A-8-3)

- 1) Remove the Washer(W1) and lift up the Gear Drive.
- 2) Lift up the Gear Cam.
- 3) Lift up the Gear Connector.

NOTE

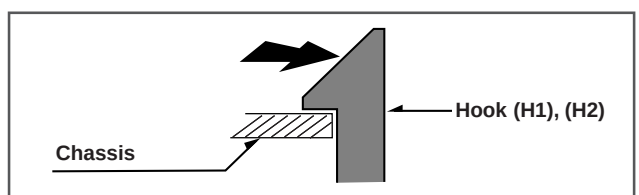
- (1) When reassembling, confirm that the Hole (A) of the Gear Connector is aligned to the Hole (A') of the Chassis (Fig. A-8-3).
- (2) When reassembling, confirm that the Hole (B) of the Gear Cam is aligned to the Hole (B') of the Chassis (Fig. A-8-2).
- (3) When reassembling, confirm that the (C) part of the Gear Cam is aligned to the (D) part of the Gear Drive as shown Fig. B-3

(Fig. B-3)

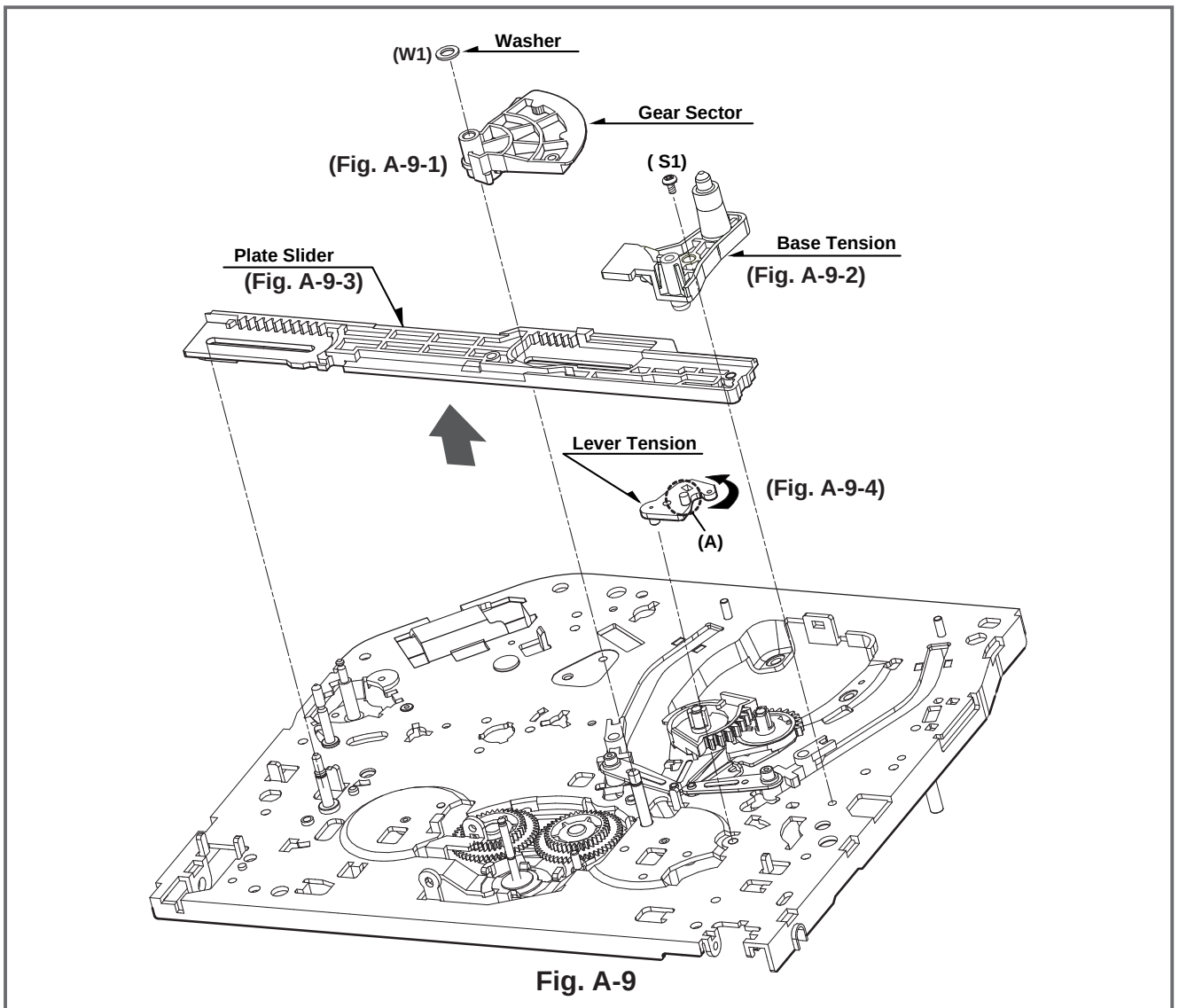


28. Bracket Assembly L/D Motor (Fig. A-8-4)

- 1) Unhook the three Hooks(H1),(H2) and push down the Bracket Assembly L/D Motor.



DECK MECHANISM DISASSEMBLY



29. Gear Sector (Fig. A-9-1)

- 1) Remove the Washer(W1) and lift up the Gear Sector.

30. Base Tension (Fig. A-9-2)/ Plate Slider (Fig. A-9-3)/ Lever Tension (Fig. A-9-4)

- 1) Remove the Screw(S1) and lift up the Base Tension.
- 2) Lift up the Plate Slider.
- 3) Hold the (A) Part of the Lever Tension and turn to the counterclockwise direction, and then lift up the Lever Tension.

NOTE

- (1) When reassembling, turn the Lever Tension to the clockwise direction in maximum.

DECK MECHANISM DISASSEMBLY

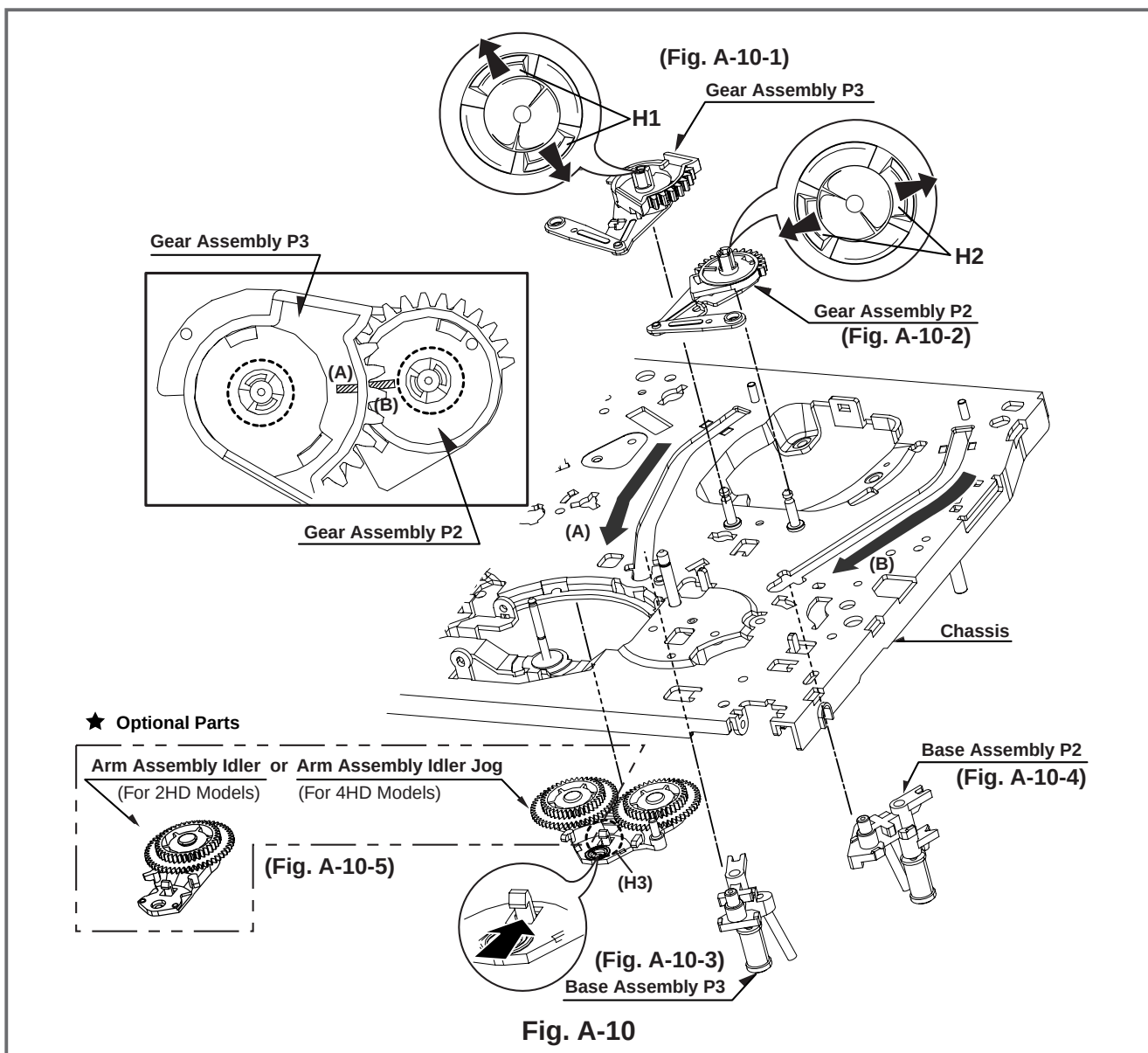


Fig. A-10

31. Gear Assembly P3 (Fig. A-10-1)/ Gear Assembly P2 (Fig. A-10-2)

- 1) Unhook the two Hooks(H1) and lift up the Gear Assembly P3.
- 2) Unhook the two Hooks(H2) and lift up the Gear Assembly P2.

32. Base Assembly P3 (Fig. A-10-3)/ Base Assembly P2 (Fig. A-10-4)

- 1) Move the Base Assembly P3 in the direction of the arrow of the Chassis Hole(A) and push down the Base Assembly P3.
- 2) Move the Base Assembly P2 in the direction of the arrow of the Chassis Hole(B) and push down the Base Assembly P2.

33. Arm Assembly Idler Jog or Arm Assembly Idler (Fig. A-10-5)

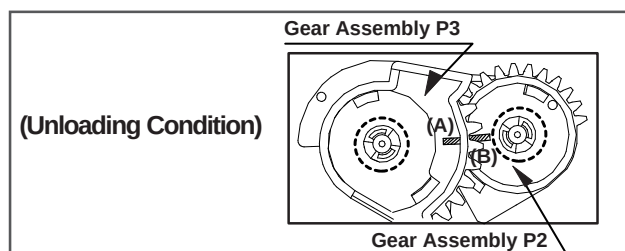
- 1) Unhook the Hook(H3) and push down the Arm Assembly Idler Jog.

NOTE

- 1) Arm Assembly Idler Jog is for 4HD Models.
- 2) Arm Assembly Idler is for 2HD Models.

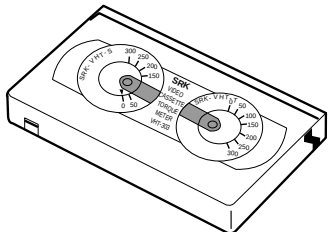
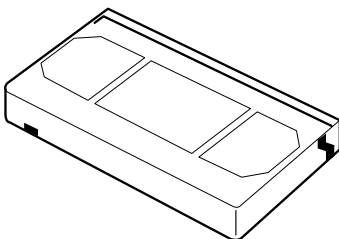
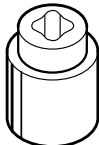
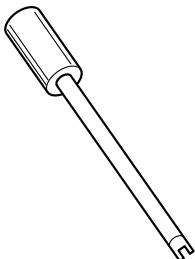
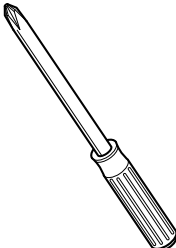
NOTE

- 1) When reassembling, confirm that the (A) Part of the Gear Assembly P3 is aligned to the (B) Part of the Gear Assembly P2 as shown below.



DECK MECHANISM ADJUSTMENT

• Tools and Fixfures for Service

1. Cassette Torque meter SRK-VHT-303(Not SVC part) Parts No: D00-D006  A rectangular cassette torque meter with two circular gauges on top. The left gauge is labeled 'SRK-VHT-3' and the right is 'SRK-VHT-1'. Both have scales from 0 to 200.	2. Alignment tape Parts No NTSC: DTN-001 PAL:DTN-0002  A rectangular alignment tape with a central rectangular cutout and two smaller rectangular cutouts on the sides.	3. Torque gauge 600g.Cm ATG Parts No:D00-D002  A cylindrical torque gauge with a hexagonal top and a black base.
4. Torque gauge adaptor Parts No:D09-R001  A cylindrical torque gauge adaptor with a hexagonal top and a central slot.	5. Post height adjusting driver Parts No:DTL-0005  A long, thin metal driver with a hexagonal base and a small hook at the end.	6. + Type driver (ø 5)  A long, thin metal driver with a hexagonal base and a small hook at the end.

DECK MECHANISM ADJUSTMENT

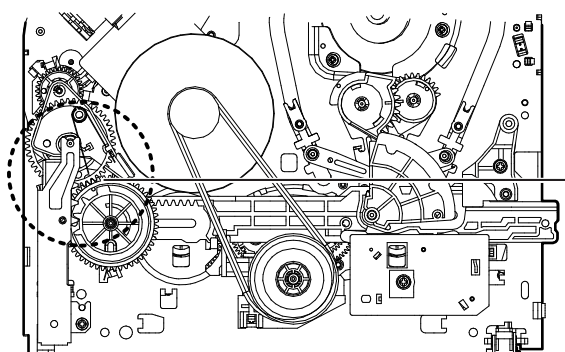
1.Mechanism Alignment Position Check

Purpose:To determine if the Mechanism is in the correct position, when a Tape is ejected.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Check Point
• Blank tape	• Eject Mode (with Cassette ejected)	• Mechanism and Mode Switch Position

- 1) Turn the Power S/W on and eject the Cassette by pressing the Eject Button.
- 2) Remove the Top Cover and Plate Assembly Top, visually check if the Gear Cam Hole is aligned with the Chassis Hole as below Fig. C-2.
- 3) IF not, rotate the Shaft of the Loading Motor to either Clockwise or Counterclockwise until the Alignment is as below Fig. C-2.
- 4) Remove the Screw which fixes the Deck Mechanism and Main Frame and confirm if the Gear Cam is aligned with the Gear Drive as below Fig. C-1(A).
- 5) Confirm if the Mode S/W on the Main P.C.Board is aligned as below Fig. C-1(B).
- 6) Remount the Deck Mechanism on the Main P.C.Board and check each operation.

CHECK DIAGRAM



BOTTOM VIEW

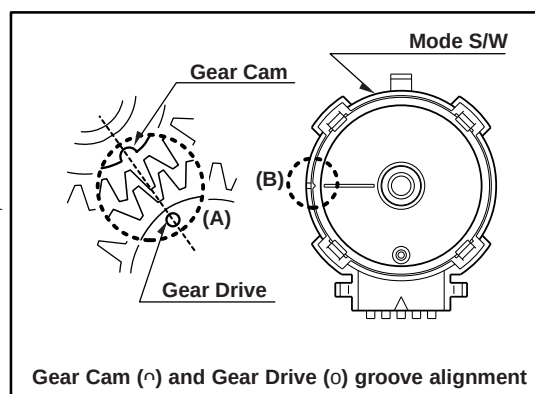
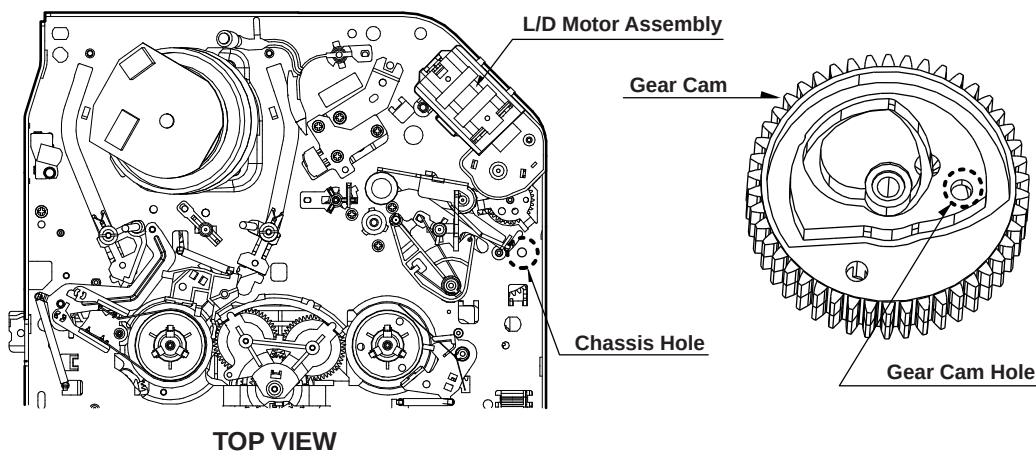


Fig. C-1



TOP VIEW

Fig. C-2

DECK MECHANISM ADJUSTMENT

2. Preparation for Adjustment (To set the Deck Mechanism to the Loading state without inserting a Cassette Tape).

- 1) Unplug the Power Cord from the AC Outlet.
- 2) Disassemble the Top Cover and Plate Assembly Top.
- 3) Plug the Power Cord into the AC Outlet.
- 4) Turn the Power SW on and push the Lever Stopper (L),(R) of the Holder Assembly CST to the back for Loading the Cassette without

Tape.

Cover the Holes of the End Sensors at the both sides of the Bracket Side(L) and Bracket Assembly Door to prevent a light leak.

Then The Deck Mechanism drives to the Stop Mode.

In this case, The Deck Mechanism can accept inputs of each mode, however the Rewind and Review Operation can not be performed for more than a few seconds because the Take-up Reel Table is in the Stop State and can not be detected the Reel Pulses.

3. Checking Torque

Purpose: To insure smooth Transport of the Tape during each Mode of Operation.

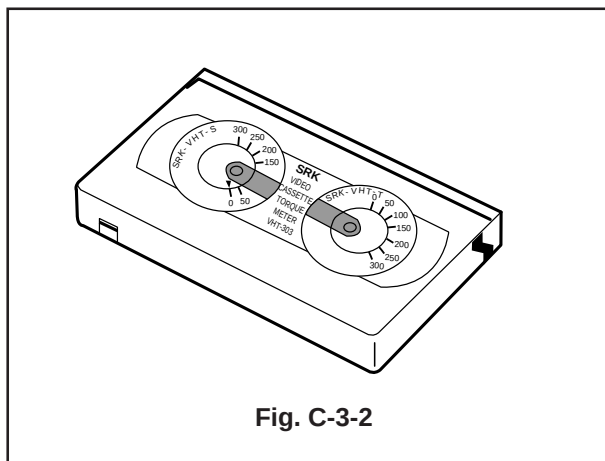
If the Tape Transport is abnormal, then check the Torque as indicated by the chart below.

Test Equipment/ Fixture		Test Conditions (Mechanism Condition)	Checking Method	
• Torque Gauge(600g/cm ATG) • Torque Gauge Adaptor • Cassette Torque Meter SRK-VHT-303		• Play (FF) or Review (REW) Mode	• Perform each Deck Mechanism Mode without inserting a Cassette Tape(Refer to above No.2 Preparation for Adjustment). • Read the Measurement of the Take-up or Supply Reels on the Cassette Torque Meter(Fig. C-3-2). • Attach the Torque Gauge Adaptor to the Torque Gauge and then read the Value of it(Fig. C-3-1).	
Item	Mode	Test Equipment	Measurement Reel	Measurement Values
Fast Forward Torque	Fast Forward	Cassette Torque Gauge	Take-Up Reel	More than 400g/cm
Rewind Torque	Rewind	Cassette Torque Gauge	Supply Reel	More than 400g/cm
Play Take-Up Torque	Play	Cassette Torque Meter	Take-Up Reel	75~115g/cm
Review Torque	Review	Cassette Torque Meter	Supply Reel	130~200g/m

NOTE:

The Values are measured by using a Torque Gauge and Torque Gauge Adaptor with the Torque Gauge affixed.

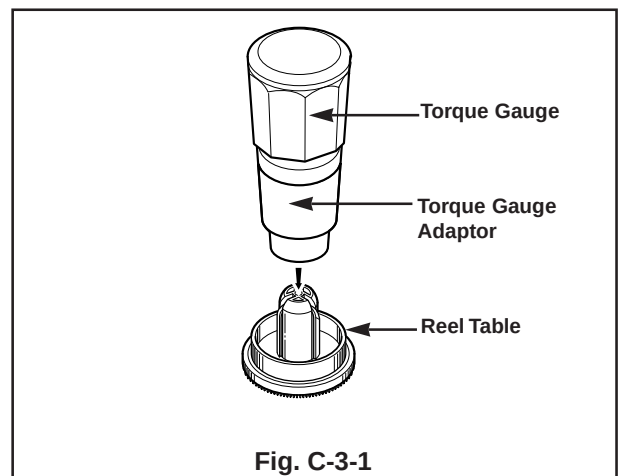
• Cassette Torque Meter (SRK-VHT-303)



NOTE:

The Torque reading to measure occurs when the Tape abruptly changes direction from Fast Forward of Rewind Mode, when quick bracking is applied to both Reels.

• Torque Gauge (600g.cm ATG)



DECK MECHANISM ADJUSTMENT

4. Guide Roller Height Adjustment

Purpose: To regulate the Height of the Tape so that the Bottom of the Tape runs along the Tape Guide Line on the Lower Drum.

4-1. Preliminary Adjustment

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
• Post Height Adjusting Driver	• Play or Review Mode	• Guide Roller Height Adjustment screws on the Supply and Take-Up Guide Rollers.

Adjustment Procedure 1) Confirm if the Tape runs along the Tape Guide Line of the Lower Drum. 2) If the Tape runs the Bottom of the Guide Line, turn the Guide Roller Height Adjustment Screw to Clockwise direction. 3) If it runs the Top, turn to Counterclockwise direction. 4) Adjust the Height of the Guide Roller to be guided to the Guide Line of the Lower Drum from the Starting and Ending Point of the Drum.	ADJUSTMENT DIAGRAM Fig. C-4-1
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4-2. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Points	Test Conditions VCR(VCP) State	Adjustment Point
• Oscilloscope • Alignment Tape • Post Height Adjusting Driver	• CH-1:PB RF Envelope • CH-2:NTSC: SW 30Hz PAL: SW 25Hz • Head Switching Output Point • RF Envelope Output Point	• Play an Alignment Tape	• Guide Roller Height Adjustment Screws

Adjustment Procedure 1) Play an Alignment Tape after connecting the Probe of the Oscilloscope to the RF Envelope Output Test Point and Head Switching Output Test Point. 2) Tracking Control(in PB Mode) : Center Position(When this Adjustment is performed after the Drum Assembly has been replaced, set the Tracking Control so that the RF Output is Maximum). 3) Height Adjustment Screw : Flatten the RF Waveform. (Fig. C-4-2) 4) Turn(Move) the Tracking Control(in PB Mode) Clockwise and Counterclockwise.(Fig. C-4-3) 5) Check that any Drop of RF Output is uniform at the Start and End of the Waveform.	Waveform Diagrams Fig. C-4-2 Fig. C-4-3
---	--

NOTE If the adjustment is excessive or insufficient the tape will jam or fold.	Connection Diagram
--	---------------------------

DECK MECHANISM ADJUSTMENT

5. Audio/Control (A/C) Head Adjustment

Purpose: To insure that the Tape passes accurately over the Audio and Control Tracks in exact Alignment in both the Record and Playback Modes.

5-1. Preliminary Adjustment (Height and Tilt Adjustment)

Perform the Preliminary Adjustment, when there is no Audio Output Signal with the Alignment Tape.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
- Blank Tape - Screw Driver(+) Type 5mm	Play the blank tape	- Tilt Adjustment Screw(C) - Height Adjustment Screw(B) - Azimuth Adjustment Screw(A)

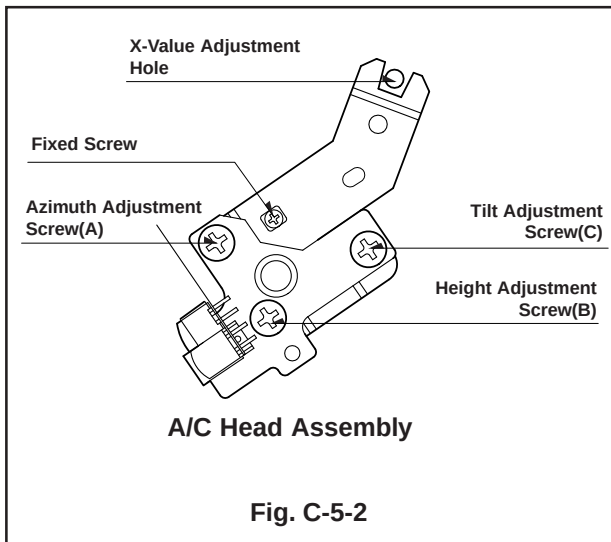
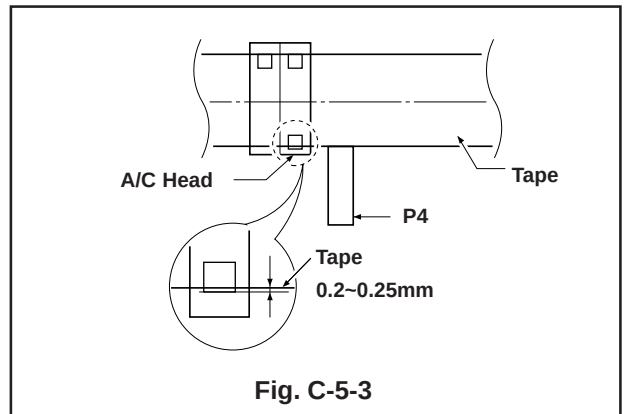
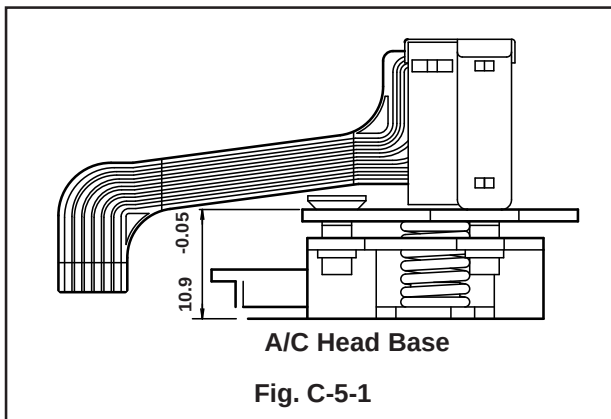
Adjustment Procedure/Diagrams

- Initially adjust the Base Assembly A/C Head as shown Fig. C-5-1 by using the Height Adjustment Screw(B).
- Play a Blank Tape and observe if the Tape passes accurately over the A/C Head without Tape Curling or Folding.
- If Folding or Curling is occurred then adjust the Tilt Adjustment Screw(C) while the Tape is running to resemble Fig. C-5-3.

- Reconfirm the Tape Path after Playback about 4~5 seconds.

NOTE

Ideal A/C head height occurs, when the tape runs between 0.2~0.25mm above the bottom edge of the A/C head core.



DECK MECHANISM ADJUSTMENT

5-2. Confirm that the Tape passes smoothly between the Take-up Guide and Pinch Roller(using a Mirror or the naked eye).

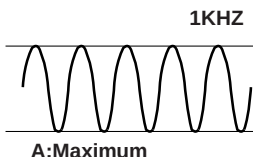
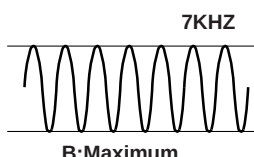
- 1) After completing Step 5-1.(Preliminary Adjustment), check that the Tape passes around the Take-up Guide and Pinch Roller without Folding or Curling at the Top or Bottom.
 - (1) If Folding or Curling is observed at the Bottom of the Take-up Guide then slowly turn the Tilt Adjustment Screw(C) in the Clockwise direction.
 - (2) If Folding or Curling is observed at the Top of it then

slowly turn the Tilt Adjustment Screw(C) in the Counterclockwise direction.

NOTE:

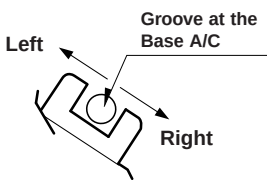
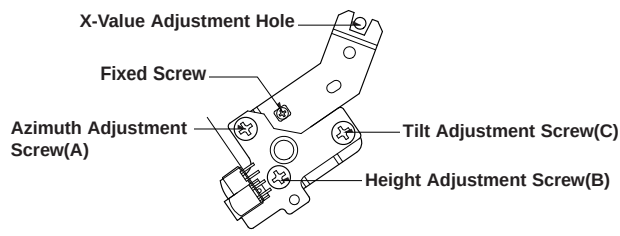
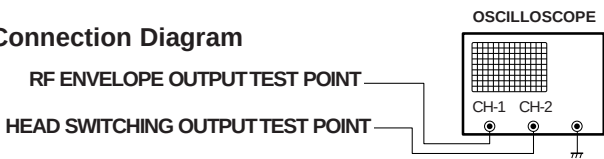
Check the RF Envelope after adjusting the A/C Head, if the RF Waveform differs from Fig. C-5-4, perform Precise Adjustment to flat the RF Waveform.

5-3. Precise Adjustment (Azimuth adjustment)

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
- Oscilloscope - Alignment Tape(SP) - Screw Driver(+) Type 5mm	Audio output jack	Play an Alignment Tape 1KHz, 7KHz Sections	- Azimuth Adjustment Screw(A) - Height Adjustment Screw(B)
Adjustment Procedure - Connect the Probe of the Oscilloscope to Audio Output Jack. - Alternately adjust the Azimuth Adjustment Screw(A) and the Tilt Adjustment Screw(C) for Maximum Output of the 1KHz and 7KHz segments, while maintaining the flattest Envelope differential between the two Frequencies.			
			
Fig. C-5-4			

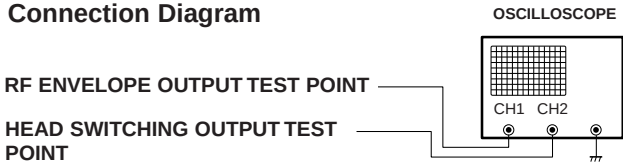
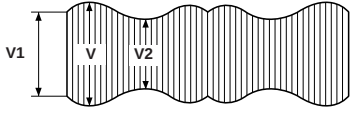
6. X-Value Adjustment

Purpose: To obtain compatibility with other VCR(VCP) Models.

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
- Oscilloscope - Alignment tape(SP only) - Screw Driver(+) Type 5mm	- CH-1: PB RF Envelope - CH-2: NTSC: SW 30Hz PAL: SW 25Hz - Head Switching Output Test Point - RF Envelope Output Test Point	Play an Alignment Tape	
Adjustment Procedure - Release the Automatic Tracking to run long enough for Tracking to complete its Cycle. - Loosen the Fixed Mounting Screw and move the Base Assembly A/C Head in the direction as shown in the Diagram to find the center of the peak that allows for the maximum Waveform Envelope. This method should allow the 31um Head to be centrally located over the 58um Tape Track. - Tighten the Base Assembly A/C Head mounting Screw.		Adjustment Diagram 	
		Connection Diagram 	

DECK MECHANISM ADJUSTMENT

7. Adjustment after Replacing Drum Assembly (Video Heads)

Purpose: To correct for shift in the Roller Guide and X value after replacing the Drum.			
Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Points
- Oscilloscope - Alignment tapes - Blank Tape - Post Height Adjusting Driver - Screw Driver(+) Type 5mm	- CH-1: PB RF Envelope - CH-2: NTSC: SW 30Hz PAL: SW 25Hz - Head Switching Output Test Point - RF Envelope Output Test Point	- Play the blank tape - Play an alignment tape	- Guide Roller Precise Adjustment - Switching Point - Tracking Preset - X-Value
Checking/Adjustment Procedure Play a blank tape and check for tape curling or creasing around the roller guide. If there is a problem then follow the procedure 4. "Guide Roller Height" and 5. "Audio Control(A/C) Head Adjustment".		Connection Diagram  Waveform $V1/V \text{ MAX} \leq 0.7$ $V2/V \text{ MAX} \leq 0.8$ RF ENVELOPE OUTPUT  Fig. C-7	

8. Check the Tape Travel after Reassembling Deck Assembly.

8-1.Check Audio and RF Locking Time during playback and after CUE or REV (FF/REW)

Test Equipment/ Fixture	Specification	Connection Points	Test Conditions (Mechanism Condition)
- Oscilloscope - Alignment tapes(with 6H 3kHz Color Bar Signal) - Stop Watch	- RF Locking Time: Less than 5 sec. - Audio Locking Time:Less than 10sec	- CH-1: PB RF Envelope - CH-2: Audio Output - RF Envelope Output Point - Audio Ouput Jack	Play an alignment tape (with 6H 3kHz Color Bar Signal)
Checking Procedure Play an alignment tape then change the operating mode to CUE or REV and confirm if the unit meets the above listed specifications.		NOTES: 1) CUE is fast forward mode (FF) 2) REV is the rewind mode (REW) 3) Referenced to the Play mode	

8-2.Check for tape curling or jamming

Test Equipment/ Fixture	Specification	Test Conditions (Mechanism Condition)
- T-160 Tape - T-120 Tape	Be sure there is no tape jamming or curling at the begining, middle or end of the tape.	Run the CUE, REV play mode at the beginning and the end of the tape.
Checking Procedure 1) Confirm that the tape runs smoothly around the roller guides, drum and A/C head assemblies while abruptly changing operating modes from Play to CUE or REV. This is to be checked at the beginning, middle and end sections of the cassette. 2) Confirm that the tape passes over the A/C head assembly as indicated by proper audio reproduction and proper tape counter performance.		

MAINTENANCE/INSPECTION PROCEDURE

1 Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the needed lubrication and the conditions of cleanliness in the unit.

Check with the customer to find out how often the unit is used, and then determine that the unit is ready for inspection and maintenance. Check the following parts.

Phenomenon	Inspection	Replacement
Color beats	Dirt on full-erase head	o
Poor S/N, no color	Dirt on video head	o
Vertical or Horizontal jitter	Dirt on video head Dirt on tape transport system	o
Low volume, Sound distorted	Dirt on Audio/control head	o
Tape does not run. Tape is slack	Dirt on pinch roller	o
In Review and Unloading (off mode), the Tape is rolled up loosely.	Clutch Ass'y S27 Torque reduced	o
	Cleaning Drum and transport system	Fig. C-9-3

NOTE

If locations marked with o do not operate normally after cleaning, check for wear and replace.

See the EXPLODED VIEWS at the end of this manual as well as the above illustrations See the Greasing (Page 4-22) for the sections to be lubricated and greased.

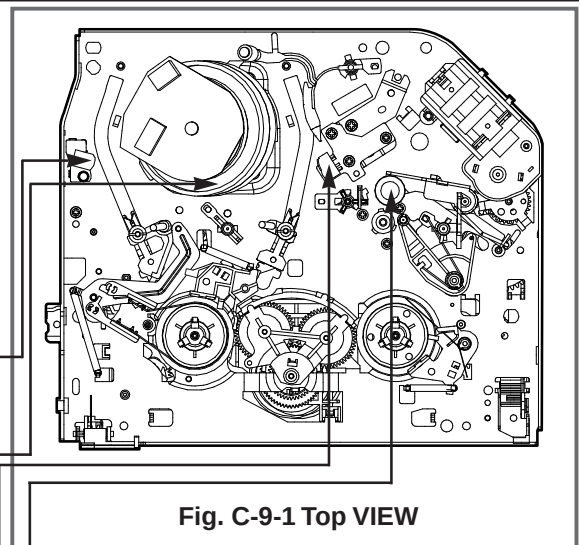


Fig. C-9-1 Top VIEW

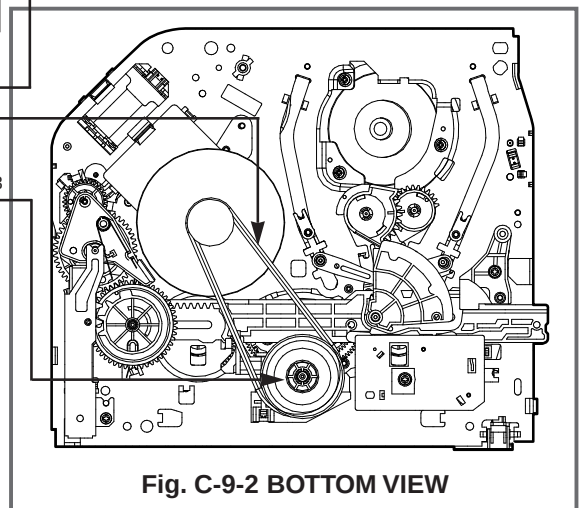


Fig. C-9-2 BOTTOM VIEW

* No. (1)~(13) Indicates the Tape Path to be traveled from Supply Reel to Take-up Reel.

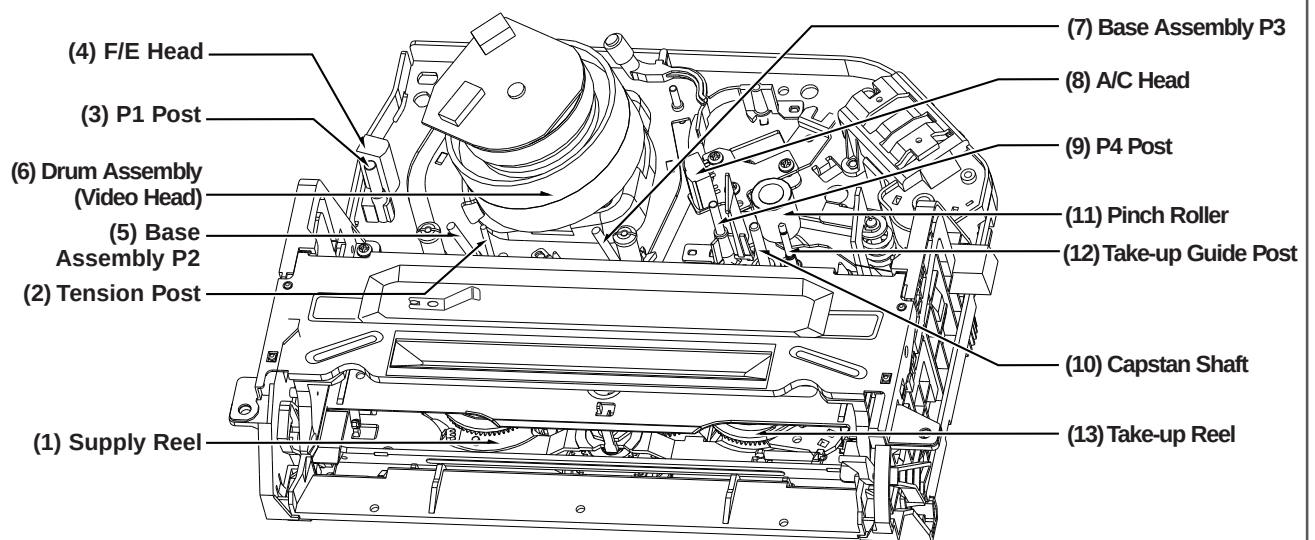


Fig. C-9-3 Tape Transport System

MAINTENANCE/INSPECTION PROCEDURE

2. Required Maintenance

The recording density of a VCR(VCP) is much higher than that of an audio tape recorder. VCR(VCP) components must be very precise, at tolerances of 1/1000mm, to ensure compatibility with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure a good picture, periodic inspection and maintenance, including replacement of worn out parts and lubrication, is necessary.

3. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR(VCP), and the environment in which the VCR(VCP) is used.

But, in general home use, a good picture will be maintained if inspection and maintenance is made every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1

When inspection is necessary Average hours used per day	About 1 year	About 18 months	About 3 years
One hour			
Two hours			
Three hours			

4. Supplies Required for Inspection and Maintenance

- (1) Grease : Kanto G-311G (Blue) or equivalent
- (2) Isopropyl Alcohol or equivalent
- (3) Cleaning Patches
- (4) Grease : Kanto G-381(Yellow) : Used only for Reel S and Reel T

5) Maintenance Procedure

5-1) Cleaning

- (1) Cleaning video head
First use a cleaning tape. If the dirt on the head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with Isopropyl Alcohol. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.
(Do not move the cleaning patch vertically. Make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)
Thoroughly dry the head. Then run the test tape. If Isopropyl Alcohol remains on the video head, the tape may be damaged when it comes into contact with the head surface.
- (2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with Isopropyl Alcohol.

NOTES:

- ① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which moves the tape.
- ② Make sure that during cleaning you do not touch the tape transport system with the tip of a screw driver and no that force is that would cause deforming or damage applied to the system.

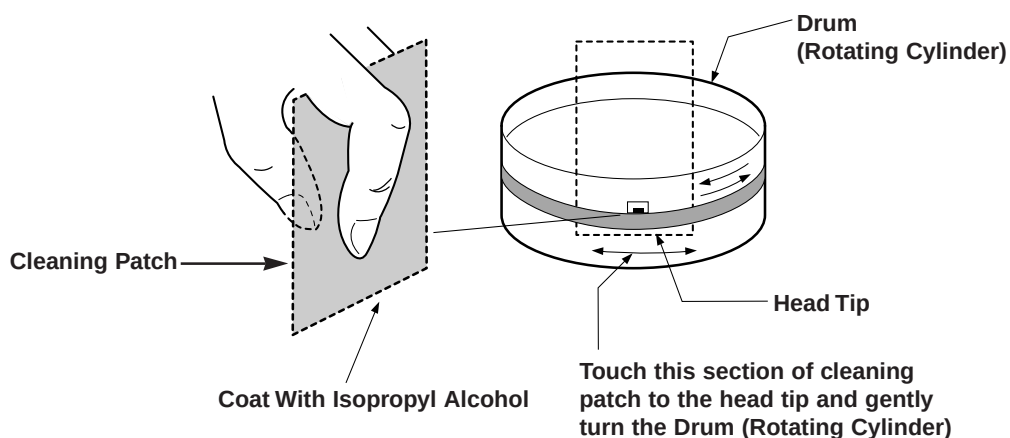


Fig. C-9-4

MAINTENANCE/INSPECTION PROCEDURE

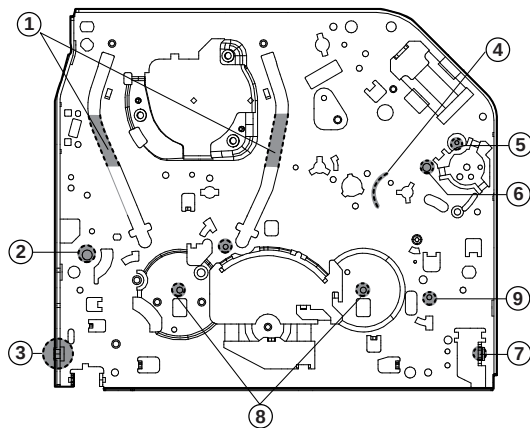
5-2) Greasing

(1) Greasing guidelines

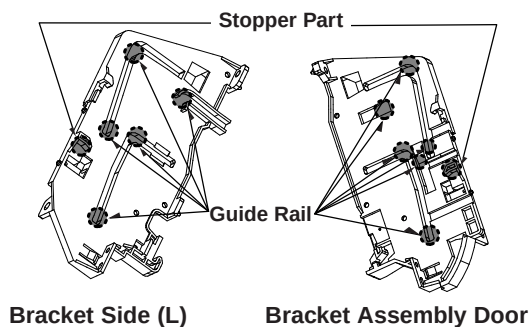
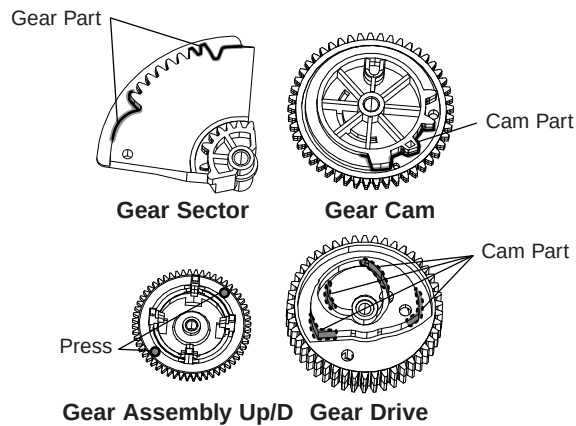
Apply grease, with a cleaning patch. Do not use excess grease. It may come into contact with the tape transport or drive system. Wipe any excess and clean with cleaning patch wetted in Isopropyl Alcohol.

NOTE:Greasing Points

- | | |
|-----------------------------------|---|
| 1) Loading Path Inside & Top side | 6) Shaft |
| 2) Base Tension Boss inside Hole | 7) Arm Assembly F/L of Buming Inside Hole |
| 3) Arm Assembly F/L "U" Groove | 8) Reel S, T Shaft (G381:Yellow) |
| 4) Arm Take-up Rubbing Section | 9) Brake T Groove |
| 5) L/D Motor Worm Wheel Part | |



Chassis (Top)



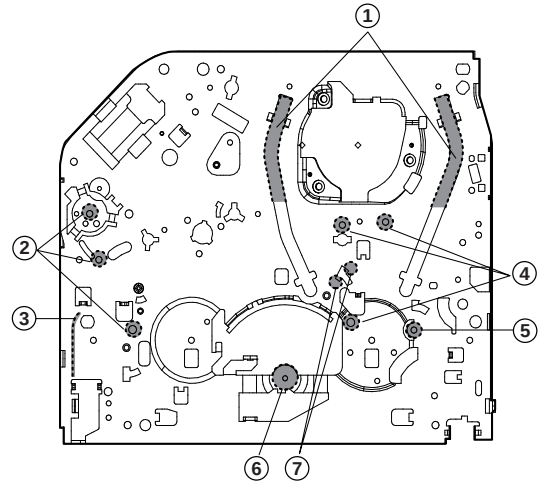
Bracket Side (L)

Bracket Assembly Door

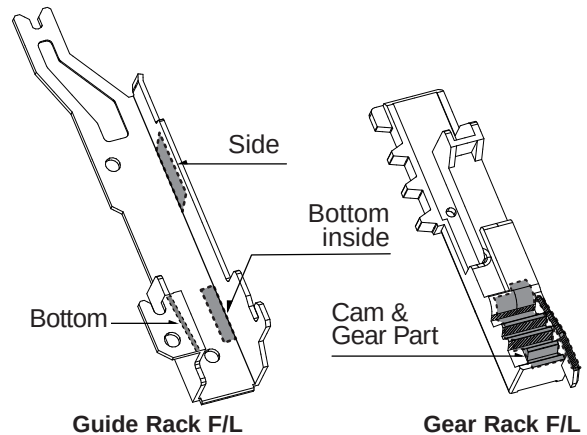
(2) Periodic greasing

Grease specified locations every 5,000 hours.

- | | |
|-----------------------------------|------------------------------|
| 1) Loading Path Inside & Top side | 5) Lever Tension Groove |
| 2) Shaft | 6) Clutch Assembly D33 Shaft |
| 3) Gear Rack F/L Moving Section | 7) Brake "S" Rubbing Section |
| 4) Shaft | |



Chassis (Bottom)



Guide Rack F/L

Gear Rack F/L

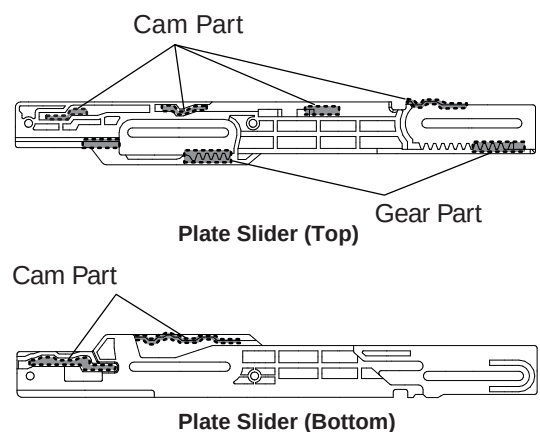


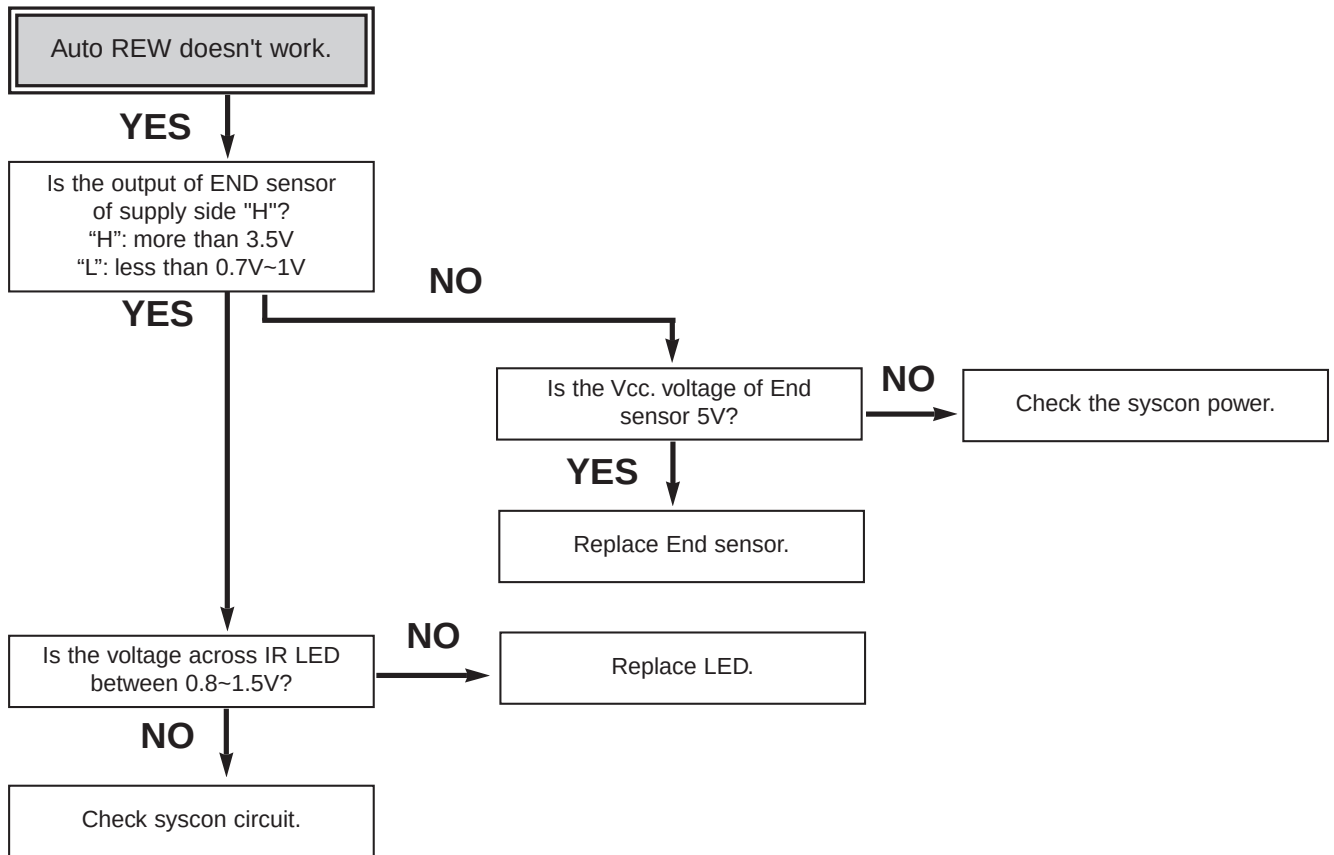
Plate Slider (Top)

Plate Slider (Bottom)

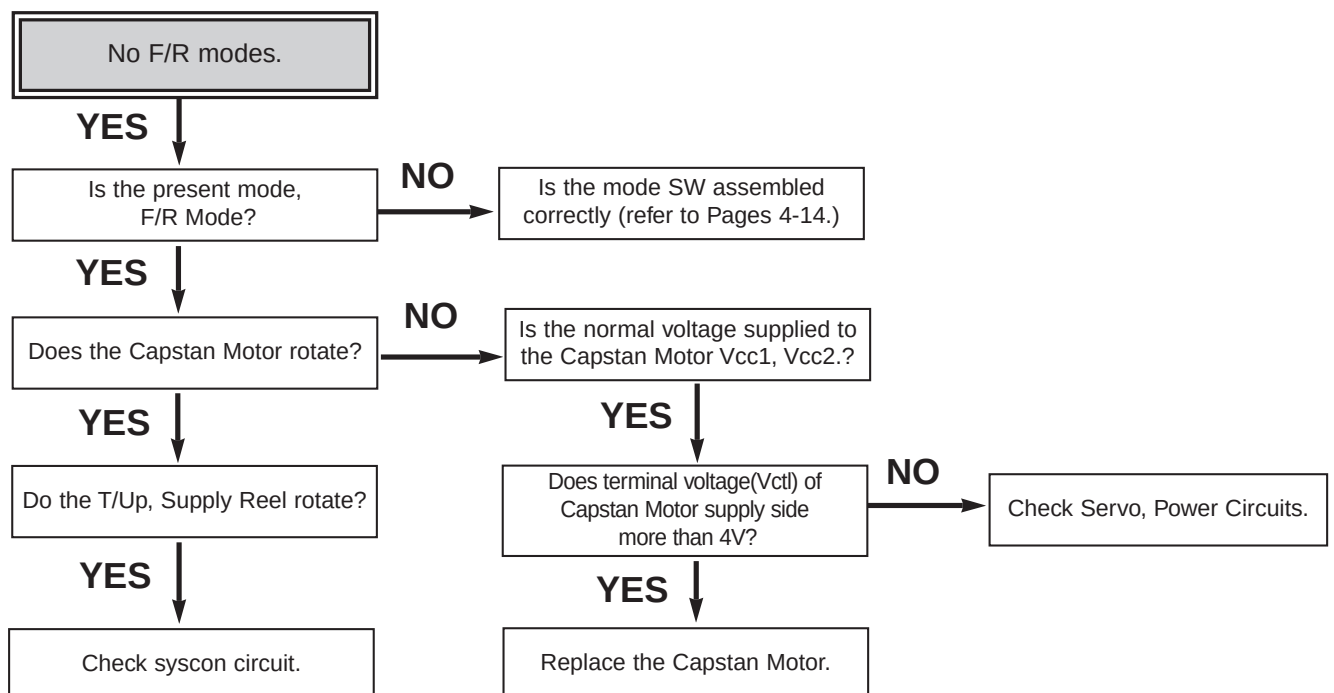
MECHANISM TROUBLESHOOTING GUIDE

1. Deck Mechanism

A.

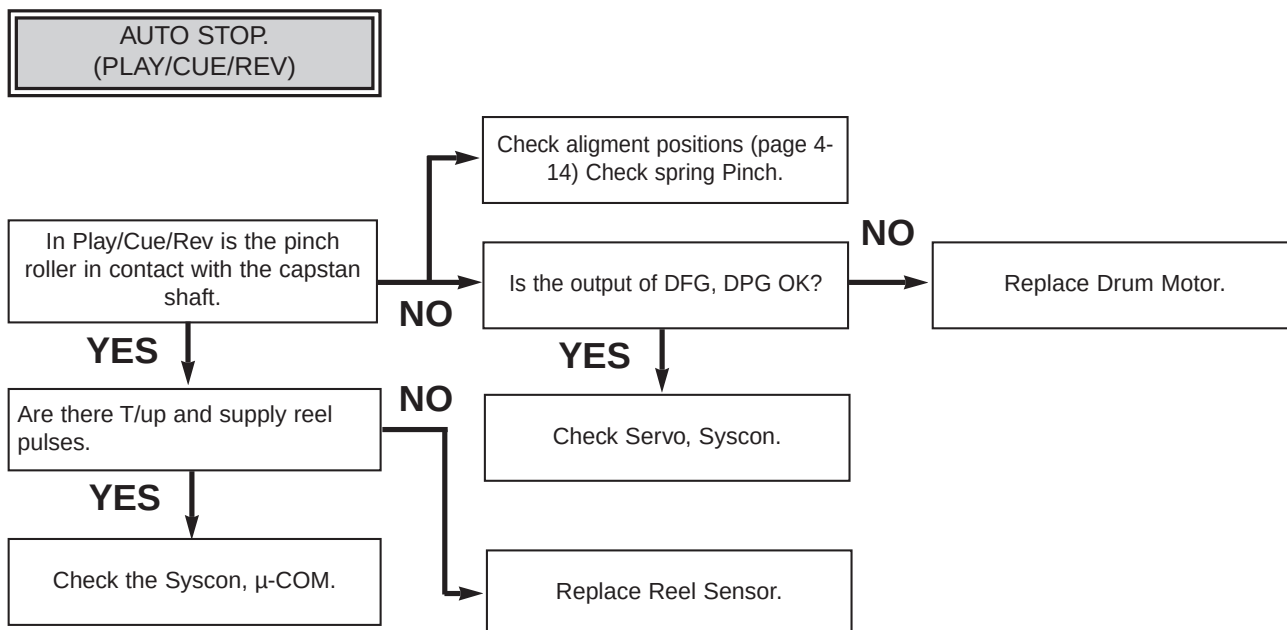


B.

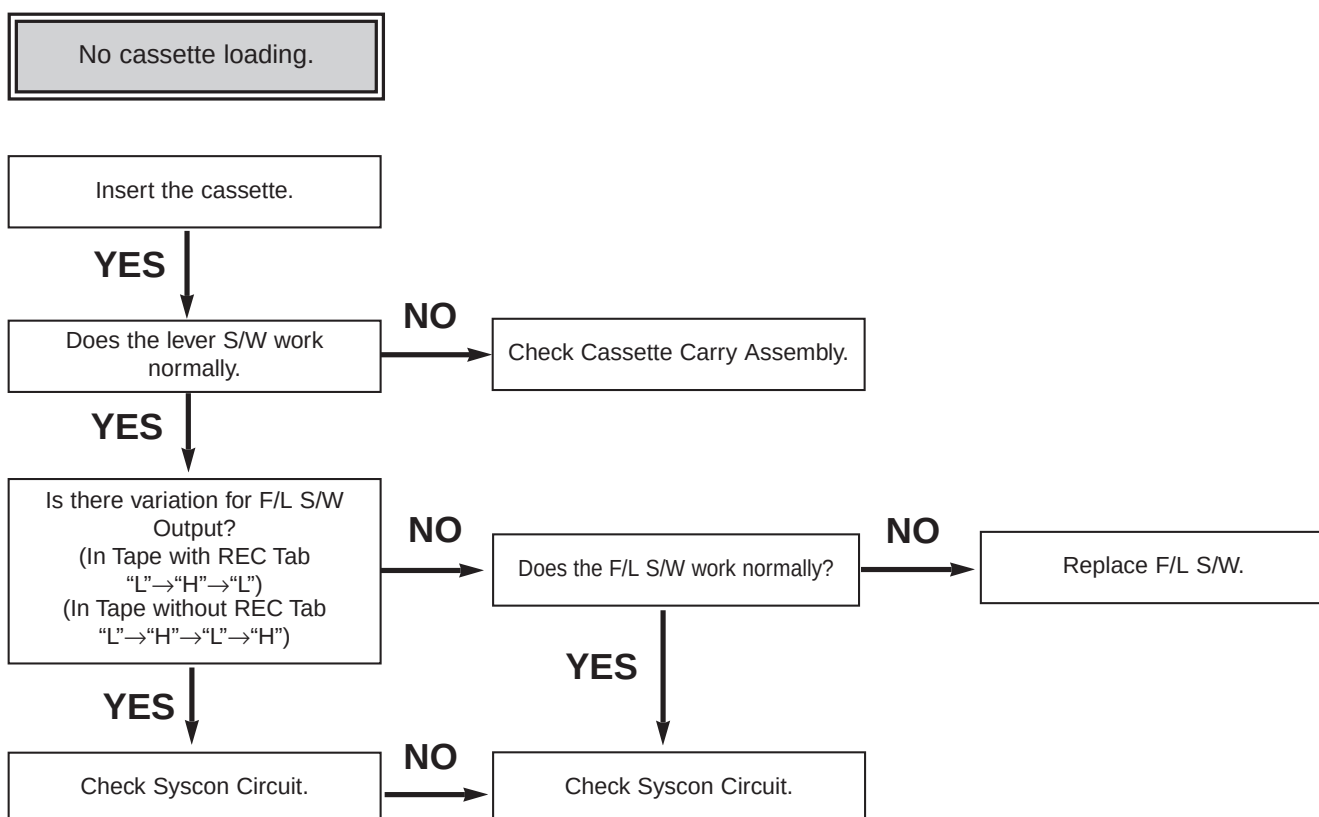


MECHANISM TROUBLESHOOTING GUIDE

C.

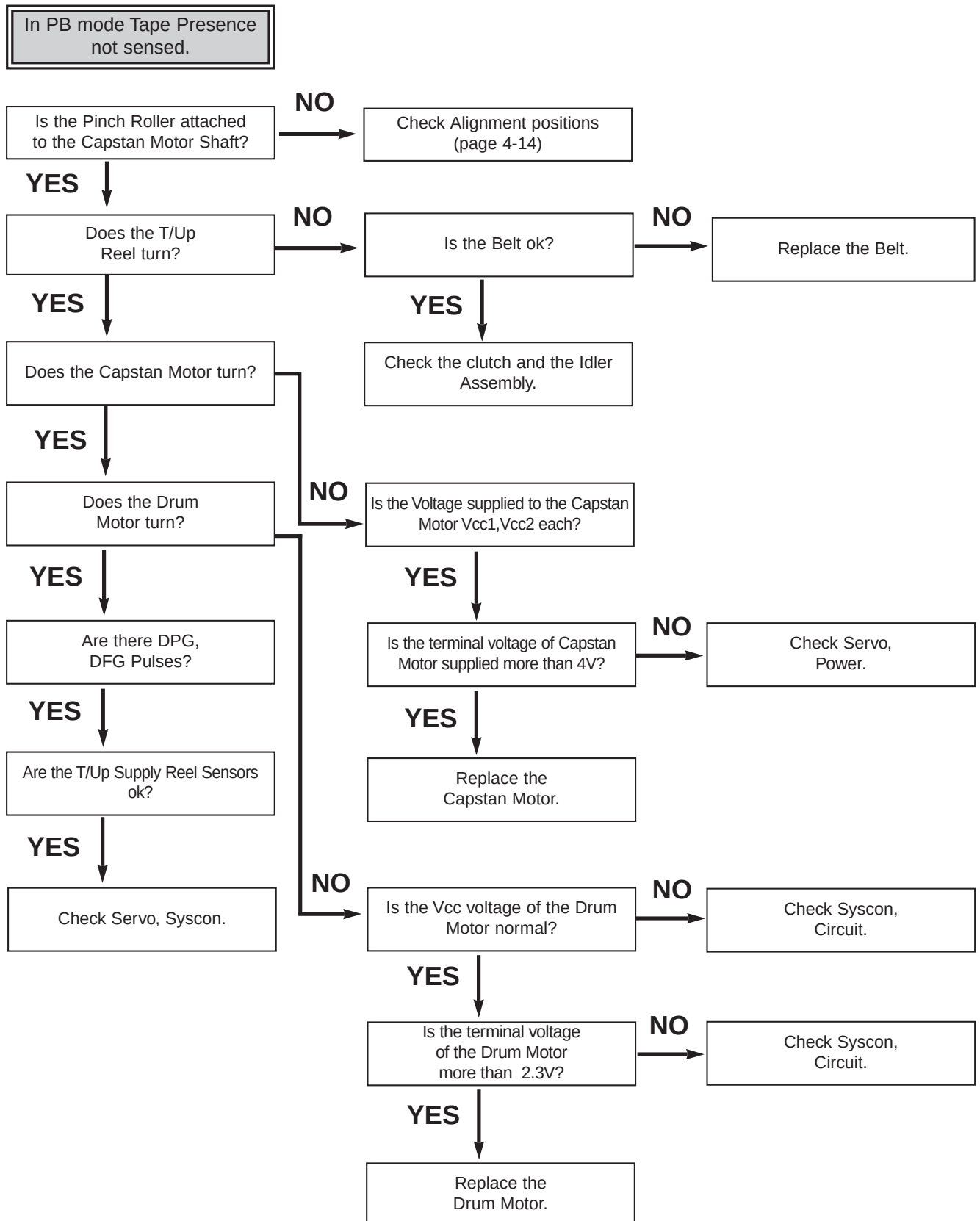


D.



MECHANISM TROUBLESHOOTING GUIDE

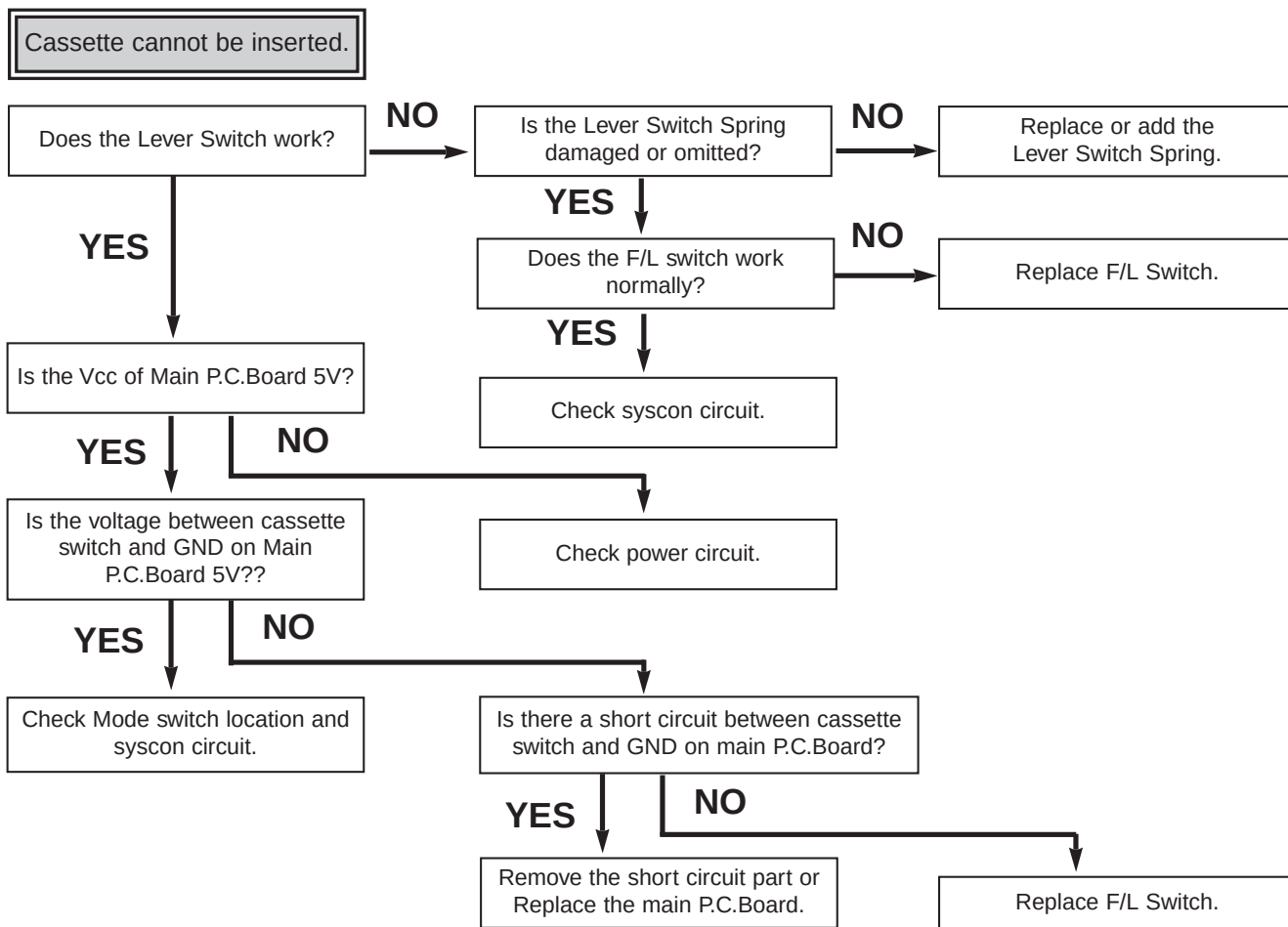
E.



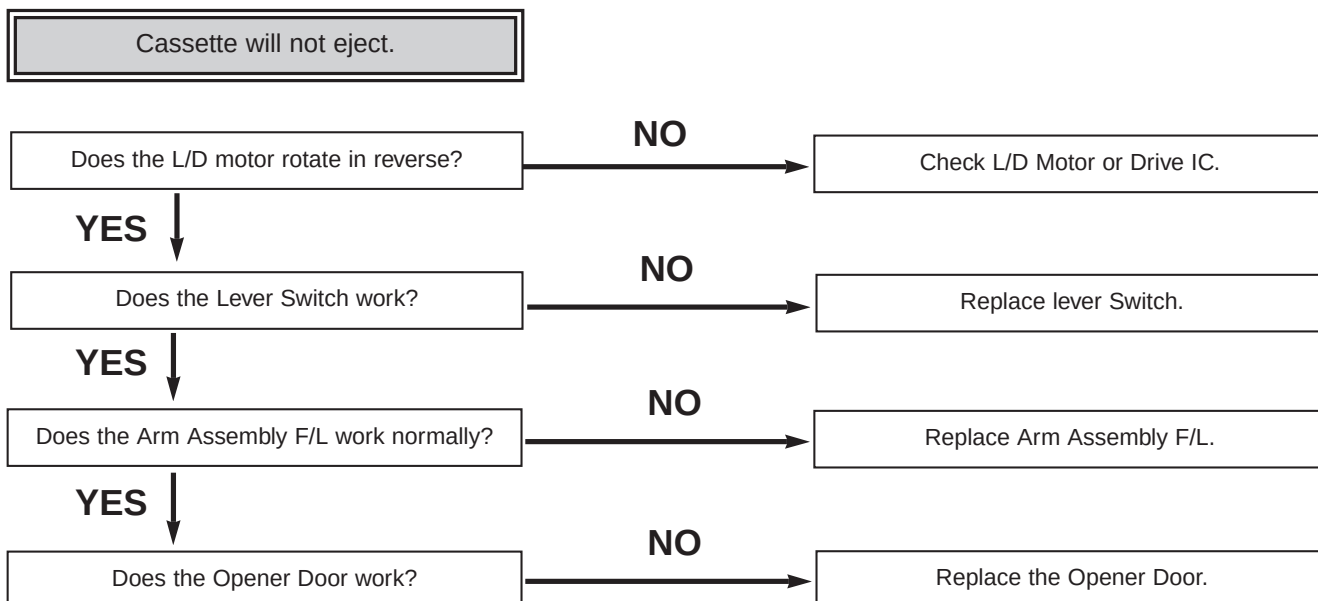
MECHANISM TROUBLESHOOTING GUIDE

2. Front Loading Mechanism

A.

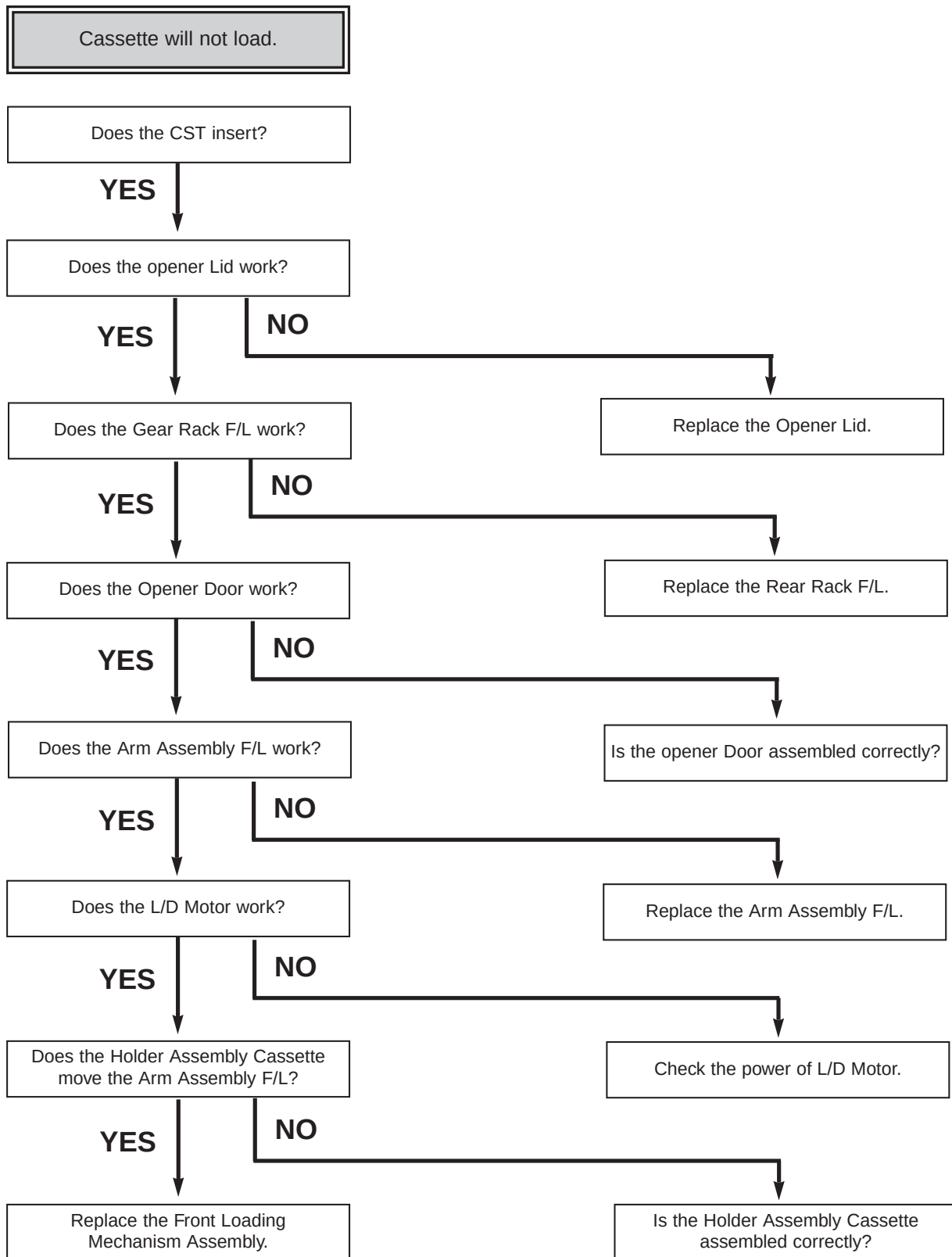


B.



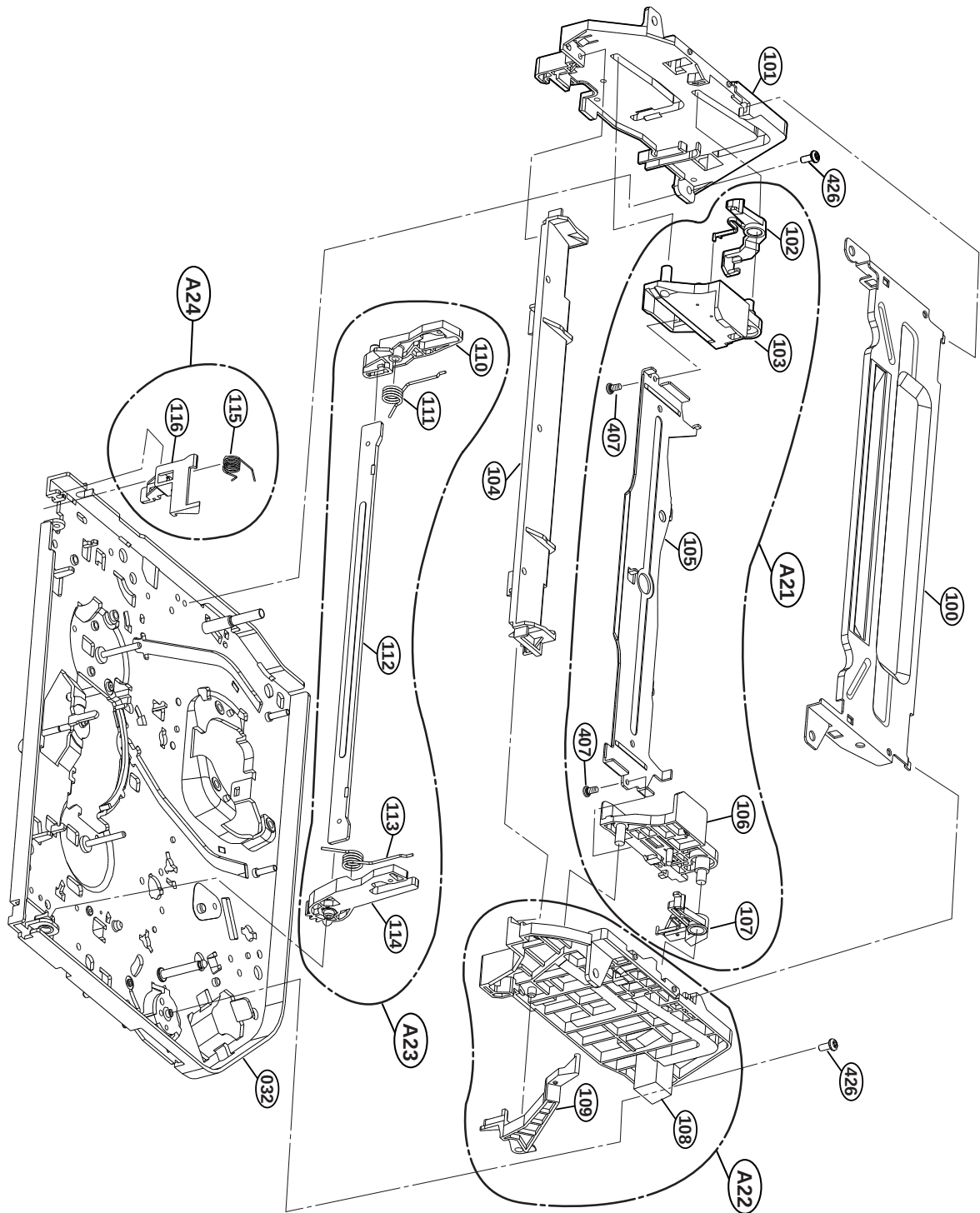
MECHANISM TROUBLESHOOTING GUIDE

C.



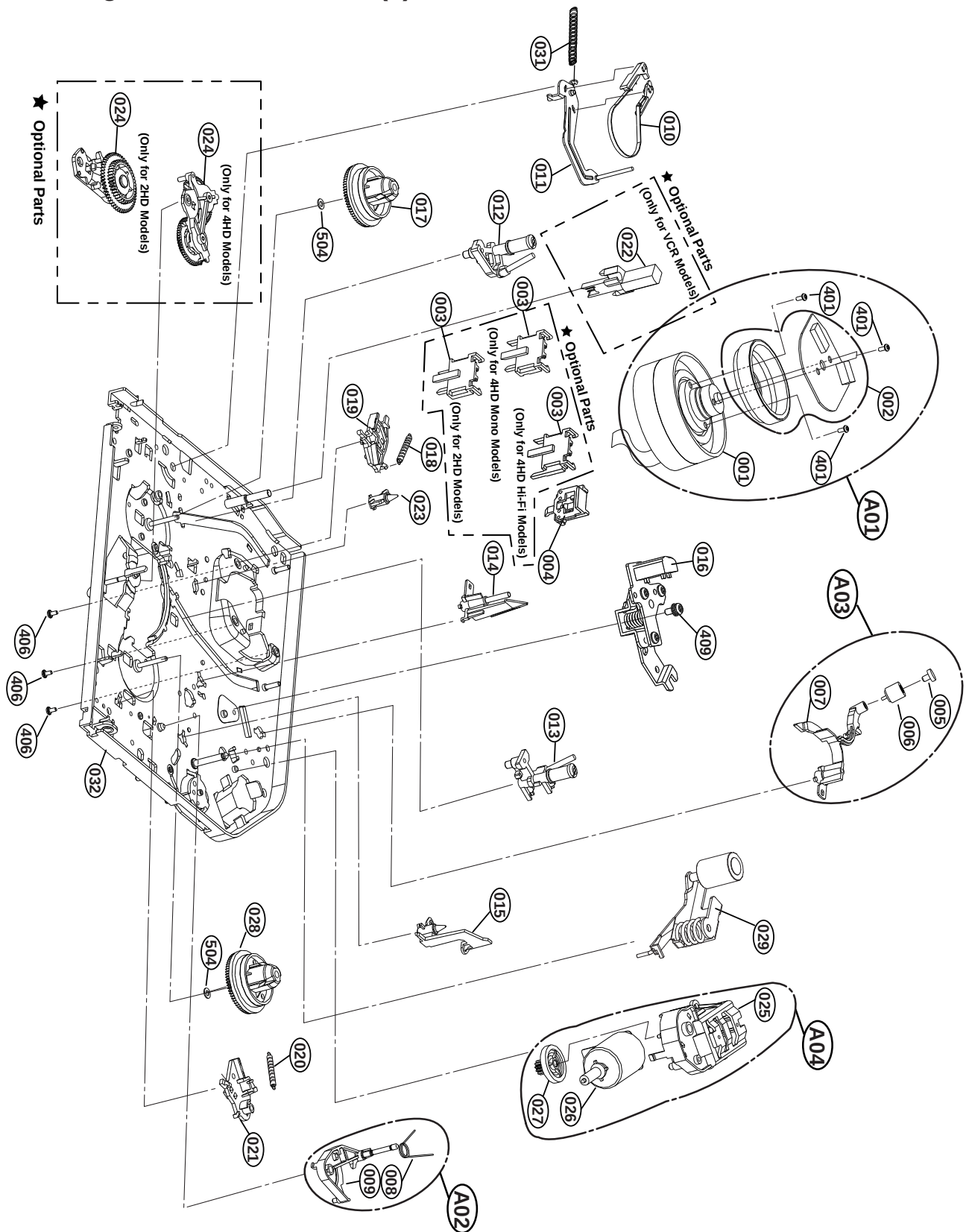
EXPLODED VIEWS

1. Front Loading Mechanism Section



EXPLODED VIEWS

2. Moving Mechanism Section(1)



EXPLODED VIEWS

3. Moving Mechanism Section(2)

